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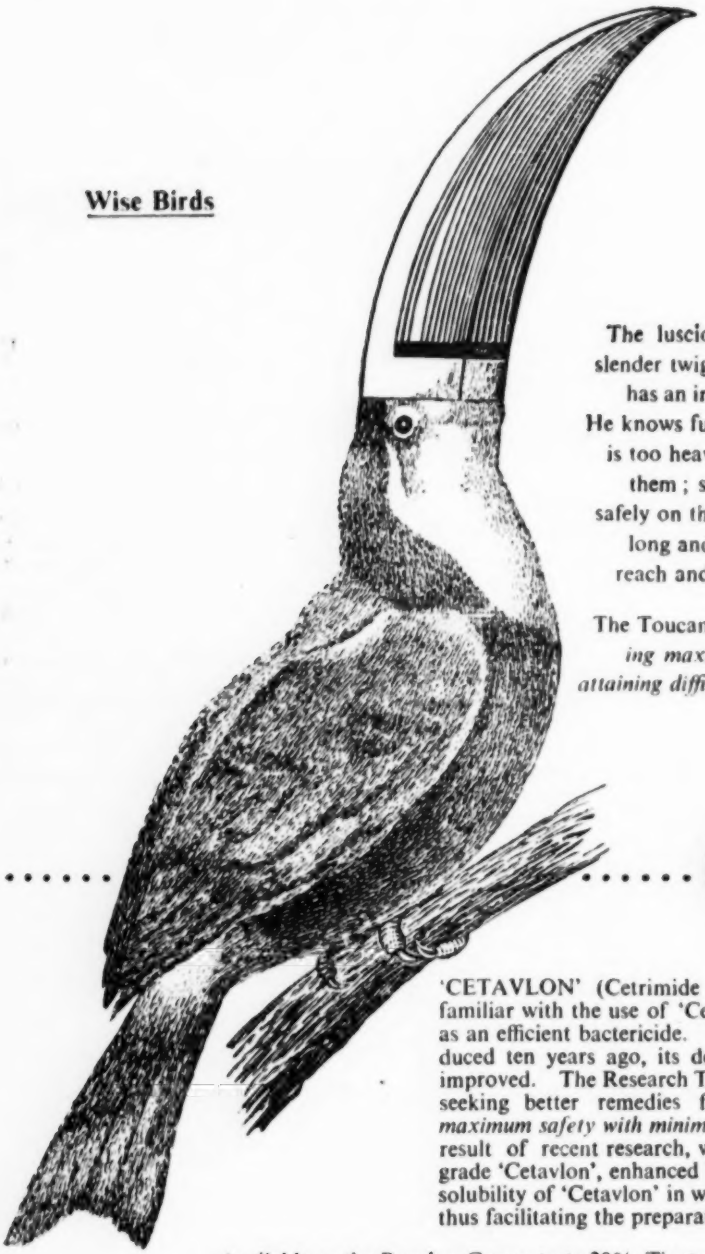

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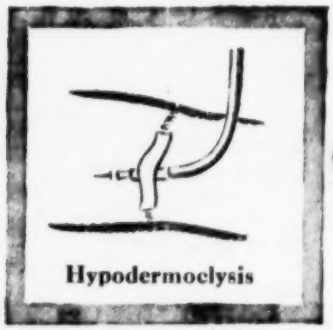
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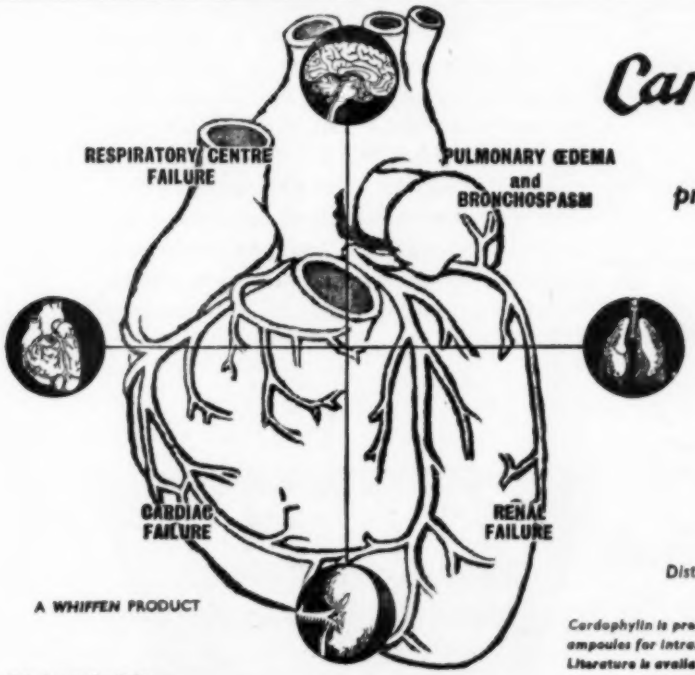

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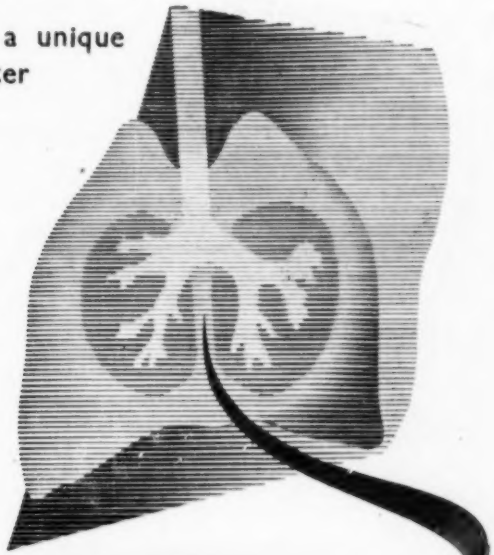

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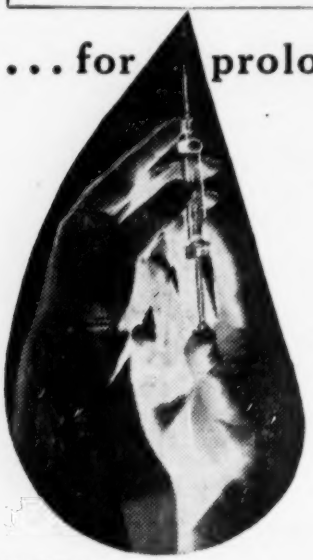

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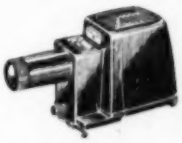

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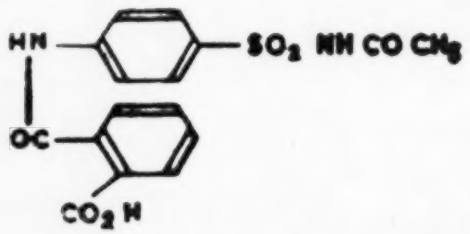

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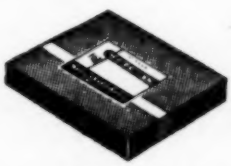

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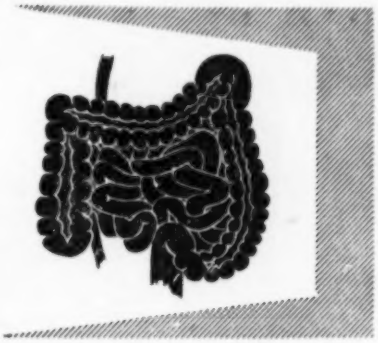

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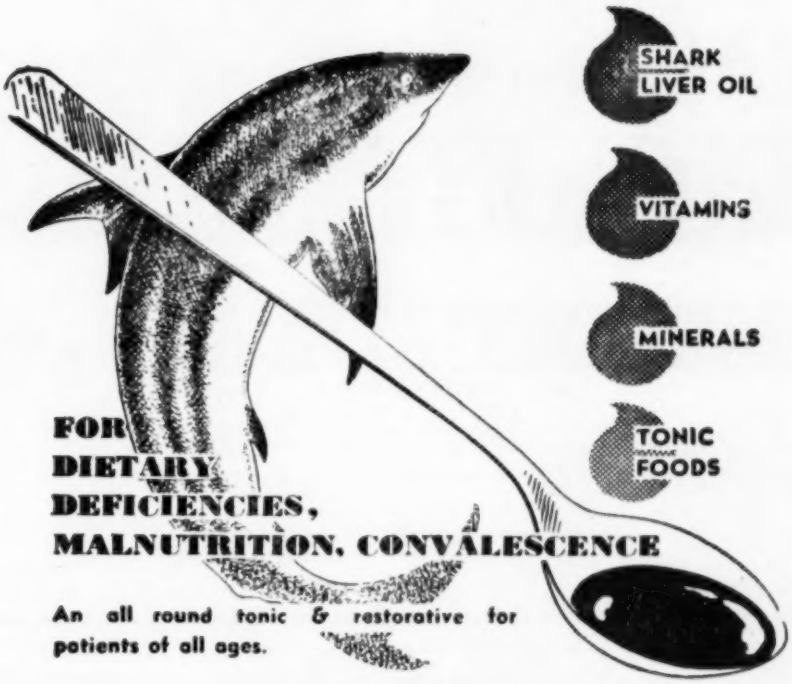

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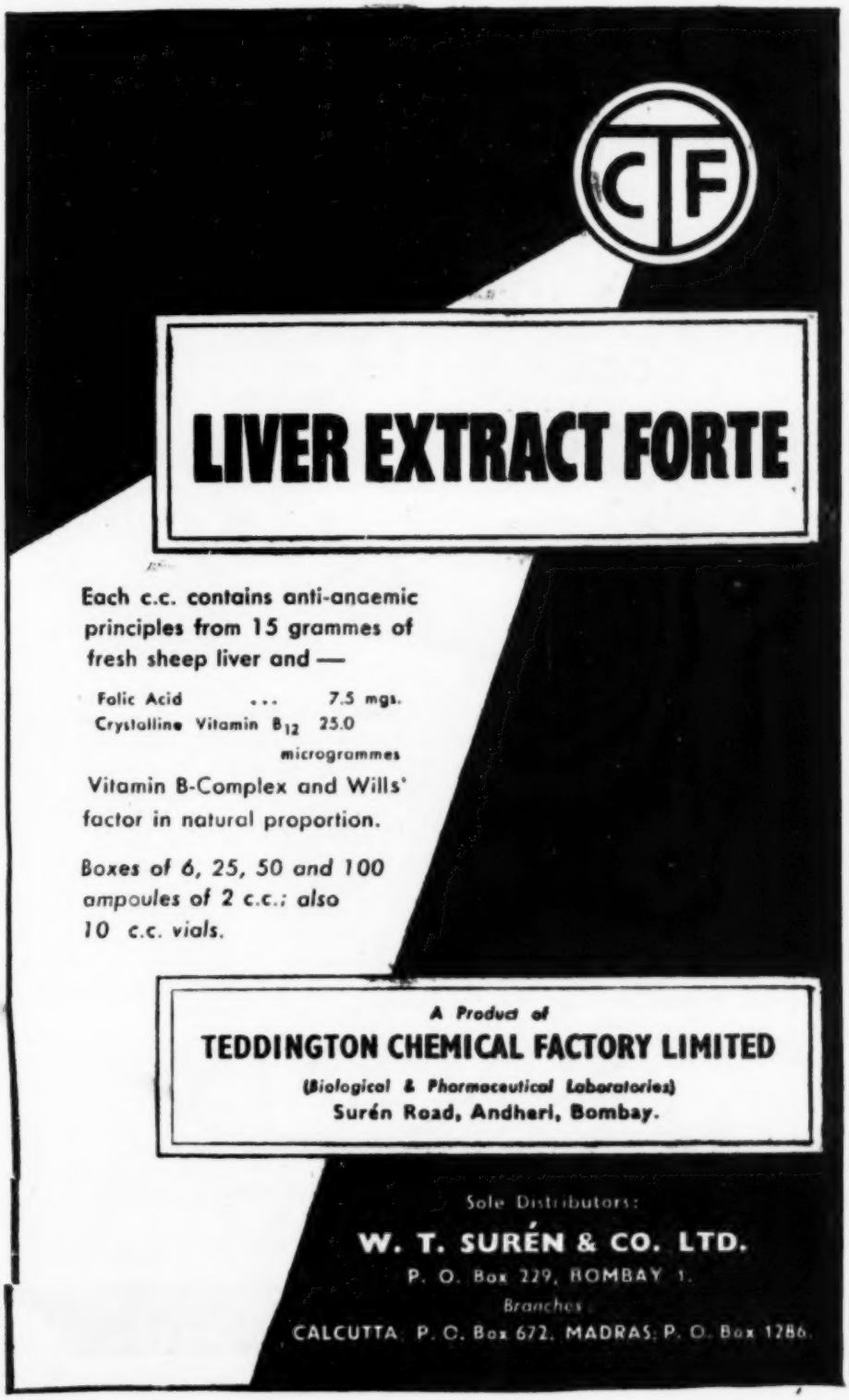
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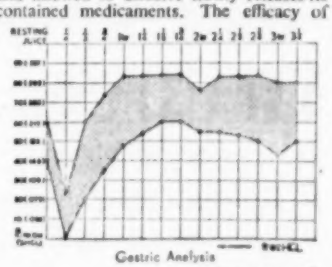

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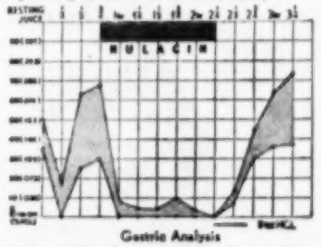
Superimposed gruel test-meal curves of six patients with duodenal ulcer.



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ORIGINAL ARTICLES

GIANT CYSTS OF THE LUNG

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INTRODUCTION

Cystic disease of the lung is a fairly common affection. It is commoner than is ordinarily realised and is one of the conditions to be always borne in mind in the diagnosis of any particular case where cough and other chest symptoms persist and tuberculosis has been excluded. This article is a study of five cases of giant cysts of the lung, i.e. of large single cysts in the lung parenchyma. In every one of these patients, the symptoms produced were so troublesome that cure could be effected only by excision of the diseased area of the lung.

Our knowledge regarding the aetiology of cystic disease of the lung is incomplete. Considerable speculation exists even as regards the fundamental point as to whether the condition is a congenital anomaly or an acquired one. The exact relationship between congenital cystic lung and bronchiectasis is another question which still remains debated. According to some (Young and Oswald, 1937) the two conditions are distinct entities, while others regard them as one and the same disease (Kirby *et al*, 1940). Some authors consider, seemingly with sufficient justification, that much has been made of the distinction between bronchiectasis and multiple cystic disease.

Confusion still exists regarding classification and nomenclature of cystic disease of the lung. Indeed, in a recent article on the subject the authors point out that there are no less than 36 synonyms for the condition (Cooke and Blades, 1952)* each name having arisen from one or other of the various ideas regarding aetiology or pathology and situation in relation to the lung or pleura.

Cases of cystic disease of the lung have been met with in the newborn and occasionally in the stillborn in whom breathing had never taken place, thus suggesting that some cases at least have a congenital origin. These cases may be associated with other congenital anomalies—anomalies of the arterial supply from the systemic arteries to the bronchial tree and lungs (Kergin, 1952), supplementary lobes of the lung, polycystic kidney (Ian Aird, 1950), polycystic pancreas, etc. Troubles may arise in these infants, necessitating an emergency operation and the findings at operation in some of these cases have been such as to confirm a congenital origin (Roberts, 1938; Dawson-Tyson, 1943).

Of the various classifications proposed for the condition, the following suggested by Cooke and Blades (1952) is simple and at the same time incorporates the majority of the known facts concerning the subject.

(1) CONGENITAL PULMONARY CYSTS:

A. *Bronchogenic cell type*—(1) Solitary, (2) Multiple.

B. *Alveolar cell type*—(1) Solitary, (2) Multiple.

C. *Bronchogenic and alveolar types combined.*

(2) ACQUIRED PULMONARY CYSTS:

A. *Bullous emphysema.*

B. *Subpleural blebs.*

The classification excludes such specific entities as hydatid cysts, mediastinal cysts, etc.

*Some synonyms for cystic disease of the lung gleaned from the literature (Cooke and Blades, 1952; Dugan and Samson, 1950) and some others:

(1) Congenital bronchiectasis; (2) Foetal bronchiectasis; (3) Embryonic cyst of the lung; (4) Cyst, multiple, lung, congenital; (5) Cystic bronchiectasis; (6) Polycystic disease, congenital; (7) Multiple pulmonary cysts; (8) Bronchogenic cysts; (9) Emphysema, congenital; (10) Adenoma, bronchogenic congenital; (11) Cyst, solitary, congenital pulmonary; (12) Cyst, giant—of the lung; (13) Bronchiectasis bronchiolar; (14) Cysts, inclusion, multiple, lung; (15) Cyst like cavity lung; (16) Bronchiectasis, neonatorum; (17) Telangiectasis; (18) Bronchiectasis; (19) Atelectatic bronchiectasis; (20) Cystic foetal bronchial adenoma; (21) Honey-comb lung; (22) Congenital pulmonary lymphangiectasis; (23) Congenital malformation of the lung; (24) Cystic inclusion of the lung; (25) Foamy lung; (26) Frothy lung; (27) Tension cyst; (28) Bullous cyst; (29) Balloon cyst; (30) Pneumatocele; (31) Cystic emphysema; (32) Air cyst; (33) Bullous emphysema; (34) Emphysematous blebs; (35) Vanishing lung; (36) Subpleural blebs.

The list is not complete.

Bronchogenic cysts possess a lining of the bronchial mucosa with either tall columnar or cuboidal ciliated cells and the wall of the cysts contains most if not all the bronchial elements (cartilage, smooth muscle, elastic tissue and muccus glands). The alveolar cysts are those in which the wall of the cyst is composed of flat, squamous cells characteristic of the air sacs.

Giant cysts: This is a general name given to a large solitary cyst of the lung. It may be congenital or acquired and may be bronchial or alveolar in type. Various synonyms are used in the description of giant cysts. Of these the terms 'balloon cysts' and 'pneumatocele' are possibly better reserved for the congenital condition and the terms "emphysematous bullae" and "subpleural bullae" for the acquired ones. An emphysematous bulla is situated in the lung parenchyma. It is the result of a breakdown of the interalveolar septa with the formation of cystic areas in the lung parenchyma (Cooke and Blades, 1952). Subpleural blebs are the result of the rupture of an alveolus directly beneath the pleura with the escaping air collecting in the areolar layer of the pleura (Albritten and Templeton, 1950)

Case Reports

Case 1. (Figs. 1-4)—Recurrent attacks of spontaneous pneumothorax ultimately becoming chronic and persistent—underlying cause, a giant cyst of the left upper lobe—cured by excision of the cyst (27-2-52).

Mrs. N., 26 yrs., a very obese lady (weighing 175 lbs.) reported for recurrent attack of breathlessness and pain in the left chest associated sometimes with fever. The first attack occurred on 7th May 1950 while lifting a heavy weight. She then developed a sudden severe pain in the left side of the chest followed two or three days later by severe dyspnoea and fever. The local doctor took a skiagram and noticed total collapse of the left lung. He referred her to a nearby hospital where on 16th May 1950 some air was aspirated. This gave considerable relief. On 4th June the attack recurred and yellow pus was drawn on aspiration (14 ozs.). She got better in about a month and was discharged home. A third attack occurred in September 1950 and now she was advised to have a course of streptomycin possibly under the supposition that the underlying cause may be tuberculosis. However, both sputum and gastric lavage had been repeatedly negative for A.F.B. Unfortunately there is no record of the nature of the organism found in the pus drawn. For some reason or other the patient did not have the course of streptomycin. In November 1950 she reported at the Stanley Hospital Medical department. Sputum was again negative for A.F.B. A course of penicillin injections was instituted and air was let out periodically. The lung, however, remained collapsed (Fig. 1). Therefore she was transferred to the surgical side for further investigations and treatment.

Her vital capacity was 1,300 c.c.

Blood examination: R.B.C.—3·1 mill.; W.B.C.—11,000; Differential count—poly 60 per cent, lympho 29 per cent, eosine 9 per cent, mono 2 per cent, Hb. 80 per cent. W. R.—negative.

Bronchoscopic examination (15-12-50) showed clearly a normal right bronchus. The left bronchus and carina could not be clearly visualised. Some blood stained material was aspirated which was negative for A.F.B.

350 cc. of air was drawn off and this gave the patient great relief. On 12-1-51 continuous suction drainage was instituted with low negative pressure with a Stedman type of suction pump. The lung, however, did not expand appreciably

Thoracoscopy (17-1-51) showed a few filmy adhesions and a totally collapsed lung. The lung did not expand even with violent coughing or attempted forced inspiration. No bullae or any other abnormality noted. 2 c.c. of 1 per cent solution of $AgNo_3$ was introduced into the pleural cavity and continuous suction drainage reinstituted. The lung now expanded in a week and the patient felt better. The skiagram now showed a "giant cyst" in the left upper lobe (Figs. 2 and 3) revealing the underlying cause. An operation was advised for excision of the cyst. But with the expansion of the lung the patient felt so comfortable that she refused operation and went home on 2-4-51. She returned with severe dyspnoea on 27-11-51. Skiagram showed the cyst clearly. Operation was again refused. A 5th attack occurred on 17-1-52 this time with greater severity. Her general condition was poor. This was improved with blood transfusions, iron, vitamins, etc. On 27-2-52 the cyst was excised. Fig. 4 is the skiagram taken about 14 months after operation.

Operation (27-2-52)—Thoracotomy by a curvilinear incision in the third intercostal space, encircling the sulcus below the breast, extending from the sternal margin to the mid-axillary line. There were a few filmy adhesions between the lung and parietes. These were easily separated. A large thin walled cyst about 3" in diameter was met with in the upper lobe. The wall was particularly thin in its outer aspect and the palpating finger easily entered into a cavity which had a very smooth lining. The cavity contained no pus or blood. The cyst was easily excised. The mouths of some divisions of the bronchi were seen in the depths and these were obliterated by a few deep sutures. The patient had a fairly smooth postoperative course and was discharged cured soon after.

Comments—This case typifies an example of giant cyst of the lung which caused recurrent attacks of spontaneous pneumothorax which ultimately became chronic and persistent. The condition became evident only after re-expansion of the lung. At one time during the course of the illness 14 oz of pus had been aspirated. The nature of the infecting organism was not established. The course of the illness was, however, such as to preclude the possibility of an underlying tuberculous condition. This is worth noting because it is usually considered that if infection occurs in spontaneous pneumothorax, the underlying cause is tuberculosis. It is also said that in spontaneous pneumothorax of apparently healthy persons, even though the collapse of the lung may recur frequently or persist over several months or even years, infection of the pleura does not occur as the lung is healthy. Rupture is ascribed primarily to anatomical imperfections and not to active disease (Waring, 1944). Yet in this case the underlying cause was almost surely not tuberculosis and infection did occur.

One of the early skiagrams of this case (Fig. 1) showed an appearance typical of tension pneumothorax.

The heart with the other mediastinal structures was pushed over to the right and the left dome of the diaphragm pushed well below. The cyst must have ruptured with a valvular opening towards the pleural cavity.

Fig. 1—(Case 1). Skiagram taken after aspiration of air periodically. While the outline of the collapsed lung is better seen now, the pneumothorax is still persisting almost entirely.

Figs. 2 and 3—(Case 1). A. P. and lateral views of the cyst (taken on 22-1-52)—the dark irregular shadows are due to lipiodal injected subcutaneously, to help in the accurate localisation of the cyst for operative approach.

Fig. 4—(Case 1). Postoperative skiagram of the chest. A. P. view (taken on 30-4-53) about 14 months after excision of the cyst.

Fig. 5—(Case 2). A. P. skiagram (taken on 26-11-50) showing the outline of the cyst clearly. The dense shadow in the middle of the outline of the cyst is that of lipiodal injected subcutaneously for localisation purposes.

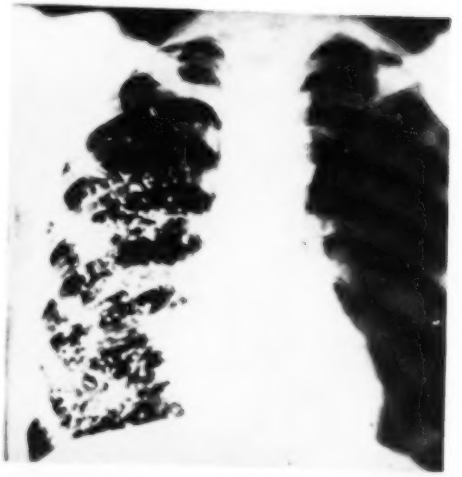

Fig. 6—(Case 2). Bronchogram (taken on 29-11-50). No lipiodal entered the cyst proper.

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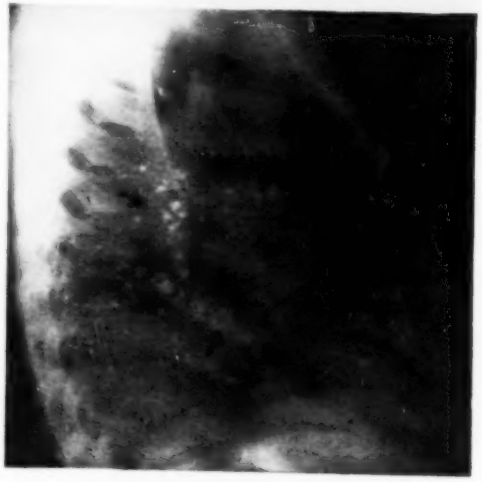


Fig. 7—(Case 2). Bronchogram (taken on 29-11-50). The lateral view shows clearly the lipiodal around the cyst. No lipiodal entered the cyst proper.

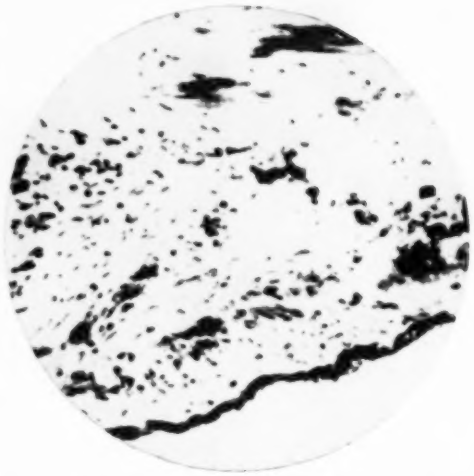


Fig. 8—Case 2). Microphotograph of the cyst wall showing flattened cells lining the lumen of the cyst, and loose connective tissue under it. Remnants of the stretched and replaced muscle layers can be seen at the left lower corner (bronchial type of cyst)

Fig. 9—(Case 2). Skiagram of the chest taken on 16-12-52 i. e. about 2 years after operation. The patient is now free from all symptoms.

Fig. 10—(Case 2). Shows anterolateral incision used for lobectomy of the middle lobe.

Fig. 11—(Case 3). A. P. skiagram of the chest taken on 10-12-51 a few days after admission.

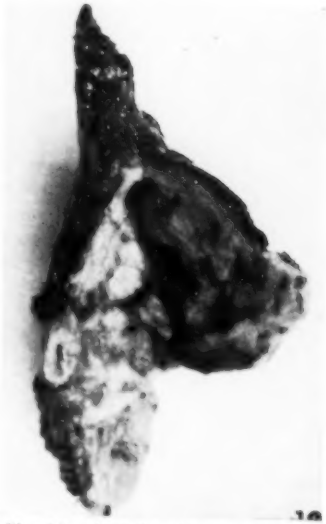


Fig. 12—(Case 3). Shows the resected specimen of the lung.

Sometimes the skiagraphic appearances of a giant cyst and of a spontaneous pneumothorax may superficially resemble each other, but it is always possible to distinguish one from the other on a careful scrutiny. In the case of a giant cyst, lung structure will be found almost entirely around the thin pencil outline of the cyst wall. In spontaneous pneumothorax, the lung will be found collapsed towards the hilum.

Some of the patients with trouble similar to that of the case reported on here, are unnecessarily relegated to a life of invalidism by advice of bed rest and sanatorium line of treatment. This has been due to an erroneous impression that the underlying cause is tuberculosis or due to it entertaining a hope that with rest expansion of the lung will occur. Both assumptions are wrong. Bed-rest will not prevent recurrent attacks of spontaneous pneumothorax. In fact, many of these attacks occur while the patient is at rest (Brock, 1948). The thing to do in these cases is to find the underlying cause and treat it. Want of realisation of these facts has resulted in such patients languishing away months or even years resting in bed.

The line of treatment in these cases can be summarised as follows:

(a) If the underlying cause is cystic disease, the involved area must be excised. In cases of giant cysts, whenever possible only the cyst should be removed and as much as possible of the surrounding lung tissue must be preserved. It is known that such cases may later show up cysts in other parts of the same lung or in the contralateral lung, not evidenced initially. The importance, therefore, of conserving at operation as much of the lung tissue as possible is obvious. In the cases reported here, therefore, only the cyst was excised and the post operative course has justified the treatment.

(b) Sometimes small multiple cysts may be present but only one of these may be leaking as may be evidenced by thoracoscopy in a lucky case. This serves to emphasise the importance of thoracoscopy as a diagnotic aid. Perhaps, excision of the leaking cysts alone may serve the needs of such a case. But if there are no extensive areas of healthy lung tissue intervening between the cysts, it is only common sense that the entire area involved in the cystic change be excised at one sitting.

(c) Silver nitrate or other solutions are sometimes introduced into the pleural cavity, thus setting up a chemical pleuritis. Simultaneously a continuous suction arrangement is kept up so as to make the lung expand. This has succeded in some cases by the fusion of the visceral and parietal pleura and obliteration of the pleural space—pleurodesis. Sometimes these methods totally fail. However they are worth trying, particularly in cases where no obvious cause is evident.

The patient reported on here consented for operation only after several attacks each of which caused severe disability. In view of the total collapse of the left lung (Fig. 1), possibly due to the development of tension pneumothorax, it is conceivable that death might have occurred during one of these attacks. Moreover, she suffered from the effects of infection and this itself could have caused serious trouble. This shows that even when cysts are accidentally noted they are better operated on as it is impossible to predict when serious trouble may arise in a given case. The view can no longer be held that an asymptomatic cyst can be left alone. Inevitability of infection is the strongest reason for prophylactic operation. Fortunately or unfortunately symptomless cysts are uncommon. Indeed, cystic disease must be considered as a serious condition and one which is not likely to permit the patient to reach the middle age or beyond. It, therefore, requires attention and treatment of the condition should not be postponed indefinitely (Graham, 1947). Graham goes so far as to say that he and Dr. Womack have been convinced that there is a great tendency for cystic disease of the lung to develop into carcinoma and carcinoma probably carries away a good many of the patients with cysts (Graham, 1947).

Case 2 (Figs. 5-10)—Infected giant cyst lung involving the right middle lobe. The patient was admitted extremely ill—preliminary drainage done on 17-11-50 followed by lobectomy on 3-10-51. He is now doing well.

P., a Hindu, male, 22 years, a shepherd by occupation was admitted into the medical wards for diarrhoea, fever and cough. When the diarrhoea was controlled he was transferred on 30-10-50 to the surgical side for his lung condition which was not tuberculosis. He was extremely ill and emaciated. He used to have diarrhoea off and on and the first attack was 10 years ago. The attacks of cough and fever were about a year's duration and he used to bring up large quantities of foul sputum, as much as a pint per day. There used to be pain in the right side of the chest with these bouts. He had occasional haemoptysis. There was clubbing of the fingers. Sputum was negative for A.F.B. Hb. 40 per cent; R.B.C.—3·3 mil.; W.B.C.—10,000. Skiagram of the chest showed a thin walled solitary cyst in the right mid-zone.

Bronchoscopic examination (10-11-50) showed congested mucous membrane with discharge of pus from the right bronchus. Bronchograms clearly outlined the cyst in the lateral view (Figs. 6 and 7). As it was considered that the cyst was in the nature of a tension cavity and since the patient was extremely ill the simplest available procedure i.e., Monaldi's drainage, was adopted and thus continuous suction keeping a small negative pressure was instituted. This did not cause any reduction in the size of the cavity and no improvement in symptoms occurred. So on 17-11-50 the abscess cavity (localised as shown in Fig. 5) was freely drained removing the overlying lid of lung tissue with diathermy knife. His general condition thereafter improved, though slowly but the cavity never closed up. It had a very smooth lining with multiple openings of bronchial orifices in the depths. Consequently lobectomy of right middle lobe was done on 3-10-51.

Operation (3-10-51)—Patient flat on neck with antero-lateral incision in the 4th interspace extending from the sternal margin to the posterior axillary line. This gave very good access to the middle lobe. With a guiding finger inside the cyst lobectomy was completed. The patient's condition thereafter rapidly improved and he was soon free from all symptoms and is now doing well.

Fig. 8 is a microphotograph of the cyst wall, showing the layer of the flattened cells lining the lumen of the cyst and loose connective tissue underneath. Remnants of the stretched and replaced muscle layer can be seen at the left lower corner—bronchial type of cyst. Fig. 9 shows skiagram of chest taken two years after lobectomy.

Comment: This patient became extremely ill due to infection in the cyst and the condition rapidly improved after excision of the middle lobe which was almost entirely occupied by the cyst. It is now about 15 months since operation, and the patient is totally free from symptoms and is capable of very hard physical labour. His weight has

increased by 29 lbs. (from 51 lbs. to 80 lbs.). Though it is not possible to say whether the cyst was congenital in origin or not, there was a suggestive history that he was ill for the past several years with diarrhoea and attacks of fever with rigor. The infection of the cyst might have occurred several years earlier accounting for his chronic ill health. In the operative technique, one point worth drawing attention to is the anterior approach. Fig. 10 shows clearly the line of incision. Acess to the middle lobe was quite good, through this approach. While the familiar posterolateral incision is universally adopted for lobectomy of any of the various lobes, the anterior incision may conveniently be adopted for the middle lobe. As the patient is kept in the supine position in this approach, there is less risk of spill-over infection of the contralateral lung. However, if in a particular case it is likely that after exploration a more extensive resection than of middle lobe only may be required, it is better to adopt the posterolateral incision.

Case 3 (Figs. 11-16)—Infected giant cyst—right lower lobe—5 years history of attacks of chest pain off and on—worse for the past 1½ months with fever and blood stained purulent expectoration, drainage of cavity followed by segmental resection of affected area (18-2-52)—is now doing well.

C., a Hindu male, 23 years, ryot, admitted on 6-12-51—used to get attacks of pain in the right chest once in about 6 months for the past 5 years. Each attack used to last for 4-5 days. Used to get fever off and on which was thought to be malaria. But the last attack started 6 weeks ago with fever, cough and expectoration of large quantities of thick foul smelling blood stained pus. The cough was very distressing particularly on lying on his left side. The local doctor sent him in, as a case of lung abscess. At the time of admission he was anaemic, had dyspnoea on exertion and there was marked clubbing of the fingers.

Relevant investigations (1) Sputum—repeatedly negative for A.F.B. (2) Blood: Hb. 60 per cent; R.B.C.—2·5 mill.; W.B.C.—6,800; Differential count—poly 30 per cent; lympho 50 per cent; eosino 12 per cent; mono 8 per cent.

Skiagram of the chest showed a large cyst in the right base with a clear outline. There was a fluid level. There was very little pneumonitis around. Appearances were suggestive of an infected cyst of the lung (Fig. 11). After a few days of preparation which included bronchoscopic aspirations and penicillin instillations, on 24-12-51, thoracotomy and drainage of the infected cyst were performed, resecting 2" of the posterior ends of the 8th and 9th ribs and the intervening intercostal bundle.

On 30-12-51 at about 9 p.m. i.e., six days after operation the patient developed sudden severe haemoptysis and was in great distress. The pulse rate went up to 140 per minute. Blood transfusion was immediately started. The cavity was found to be filled with large dark blood clots. These were removed. No obvious bleeding point was evident. A large vaseline gauze pack was introduced and the parietal wound strapped up. The patient soon got much better, but as was only to be expected from the nature of the disease, the cavity did not shrink in size. So, on 18-2-52 segmental resection was performed.

Operation—Lobectomy was avoided as there was a fair amount of lung tissue worth preserving. Fig. 12 shows the resected specimen. The patient got much better quickly and was discharged on 23-4-52. He is free from symptoms now. Fig. 13 shows the lobe removed. Fig. 16 shows post-operative x-ray on 26-2-52. Figs. 14 and 15 are micro-photographs of the cyst wall. The lining membrane shows well marked squamous metaplasia (Fig. 14). Section in another area (Fig. 15) shows dilated bronchii with tall columnar lining. This cyst also is of the bronchial type.

Comment: The fact that the patient used to get pain in the right side of the chest off and on for the past five years shows that the cyst formation was at least of 5 years' duration. It is not possible to be sure as to whether it was of congenital origin or not. The attacks of fever he used to suffer from and probably taken to be malaria were possibly due to mild infection of the cyst. The last attack with expectoration of thick blood stained pus must have been due to more severe infection. Preliminary drainage of the cyst was necessary to improve the general condition of the patient. The secondary haemorrhage that occurred into the cyst is a recognised complication. It is in fact one of the reasons for advising excision of the cyst even in patients not having serious trouble, as such complications may arise at any moment.

Case 4 (Figs. 17 and 18)—Case of infected cyst lower lobe of right lung (emphysematous bullae) in a man of 63. Preliminary drainage (26-3-51) followed by resection on 9-7-51. Discharged cured on 4-8-51. Is now doing well.

K., a Hindu male aged 63 years, a ryot by occupation was admitted into the medical wards on 26-2-51 for cough with expectoration of 10 years' duration. Attacks of fever, sometimes haemoptysis used to occur off and on. The condition was found to be non-tuberculous and he was transferred to the surgical department on 24-3-51. Fig. 17 shows the appearances in lateral view skiagram of the chest. Bronchoscopic and other examinations excluded the possibility of an underlying bronchogenic carcinoma. At the time of admission the patient was very ill and anaemic. A thoracotomy and drainage of the cavity was done on 26-3-51. A large cystic space about 3" in diameter with smooth lining was met with at operation. His general condition improved with this drainage and on 9-7-51 resection of the affected area of the lung was performed on 9-7-51.

Operation (9-7-51)—There were dense adhesions and separation of these caused marked oozing of blood which was controlled by gel foam pack. Almost the entire lower lobe except for a small portion of healthy lung corresponding to the superior segment was resected. Post-operative course was uneventful and the patient was discharged on 4-8-51 and is now doing quite well. Fig. 18 shows skiagram of chest some weeks after operation.

Comment: This patient, the oldest in the series was 63, the youngest being 22—Cases 2 and 5. The patient was harassed with chronic cough, fever and haemoptysis off and on for the past 10 years. It is possible that the cyst was dormant giving no trouble for several years though of congenital origin or it might have been an acquired variety, an emphysematous cyst. But the patient had no evidence of emphysema and his general condition rapidly improved, after excision of the cyst.

Case 5 (Figs. 19-24)—Infected cyst right upper lobe, anterior and posterior segments. Thoracotomy and drainage (15-7-52). Segmental resection on 9-11-52. Is now doing well.

A., Hindu, male, 22 years, came with a history of one year's duration of attacks of cough with foul smelling expectoration and fever. He was referred in July 1952 as a case of lung abscess. He was then very anaemic, had club-

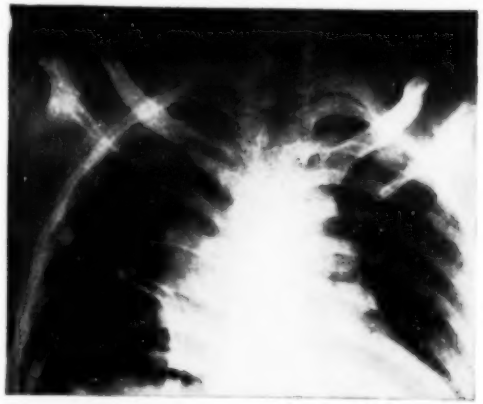
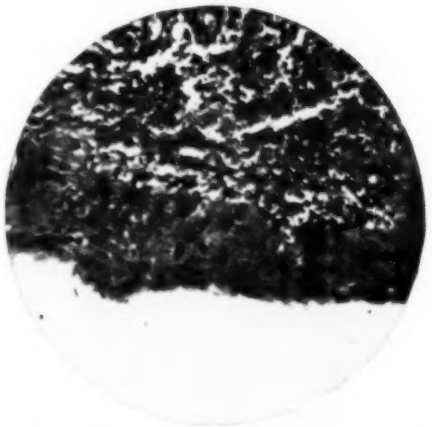
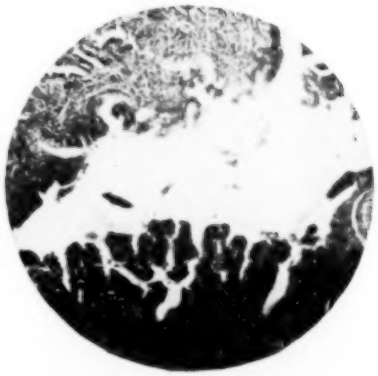


Fig. 13—(Case 3). Skiagram of the chest taken after lobectomy.





Figs. 14 and 15—(Case 3). Microphotographs of the cyst wall taken at two different areas. Fig. 14 shows well-marked squamous metaplasia. Fig. 15 shows dilated bronchi with tall columnar epithelium (bronchial type of cyst).

Fig. 16—(Case 3). Postoperative skiagram of the chest taken on 26-2-52.

Fig. 17—(Case 4). Lateral view of chest showing outline of cyst with a fluid level. The cyst was in the posterior aspect of the lower lobe.

Fig. 18—(Case 4). Postoperative skiagram of the chest.

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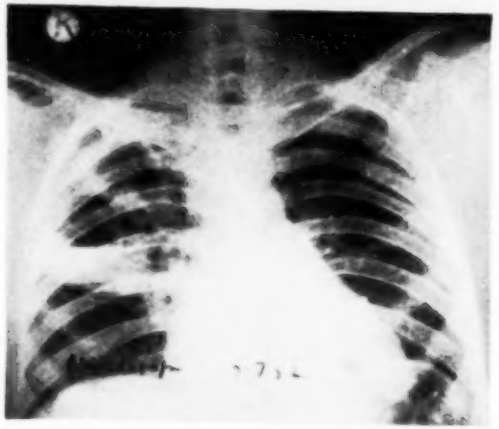


Figs. 19 and 20— Case 5. A. P. and lateral skiagrams of the chest taken on 5-7-52 showing the cyst in the upper right lobe with a fluid level.

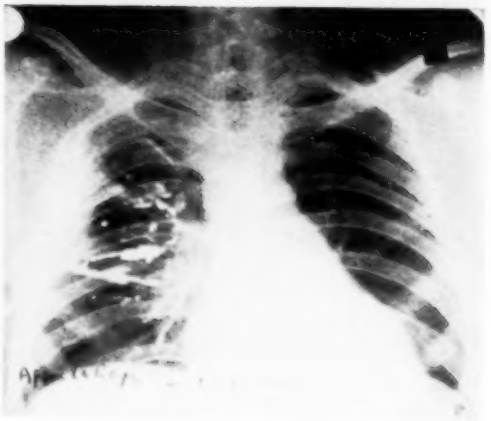
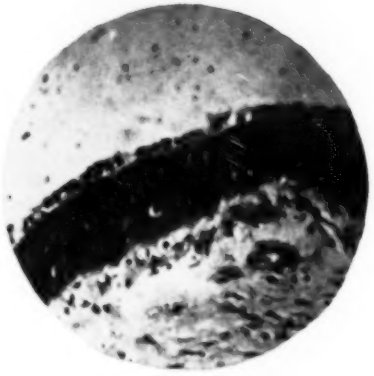
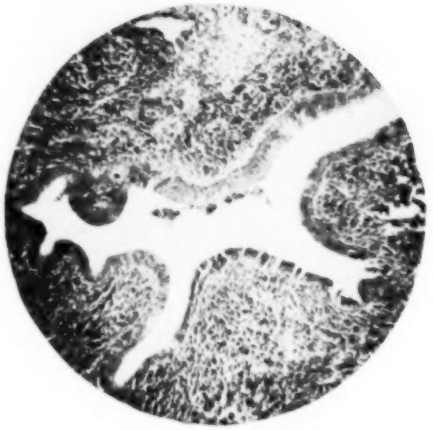


Fig. 21— Case 5. Skiagram taken after introducing lipiodal through a catheter passed into the cavity through the parietal wound. The extent and outline of the cyst wall is fairly well brought out. The concentric circles are due to the catheter coiled on the chest wall.

Fig. 22— Case 5. Photograph of the removed cyst. This shows a single cavity with several crisscross incomplete septa.





Figs. 23 and 24— Case 5. Microphotographs of the cyst wall showing the lining of tall columnar epithelium and in places metaplastic changes into cuboid and flattened epithelium (bronchial type of cyst).

bing of fingers, and had distressing cough with expectoration of pus. Skiagram showed (Figs. 19 and 20) involvement of the right upper lobe and fluid level. Thoracotomy excising a portion of 3rd rib centering on mid-axillary line was performed and the abscess cavity drained. The general condition improved but the wound did not heal. Digital examination of cavity showed a cystic space with smooth lining. Lipiodol was introduced through the parietal wound and skiagram so taken showed clearly the outline of the cyst (Fig. 21).

On 9-11-52 segmental resection of the affected portion of the lung, viz., anterior and posterior segments, was done.

The cyst was unilocular but apparently divided into several cavities by fibrous septae. These cavities freely communicated with each other (Fig. 22). Post-operative course was uneventful. Discharged cured on 19-11-52. Is now doing well.

Microphotographs (Figs. 23 and 24) of cyst wall show a lining in some places of tall columnar epithelium showing metaplastic changes into cuboid and flattened epithelium. Appearance is suggestive of an origin from the bronchiole. The subepithelial tissue shows inflammatory fibrosis. Bronchial type of cyst.

Comment: In this particular case skiagraphic appearances suggested a multilocular cyst, but operation findings and examination of the lung, removed, suggested a single cyst with septa here and there. It may be that septa in a multilocular cyst had broken down here and there. It is difficult to say which of these was the true state of affairs. The young age of the patient suggests a possible congenital origin but here again the exact origin has to remain one of speculation.

Discussion

The course of events in the cases described above clearly shows that all these cases are better treated by excision. If the patients come in very ill—and all the five cases in the series were very ill—the operation may be done in two stages. In the first stage drainage of the infected cavity is made. This usually improves the condition of the patient. As soon as the patient's general condition will allow, excision of the affected area of the lung is performed.

Sometimes cysts which were not evident at the time of the original operation manifest themselves later either in the same or in the contralateral lung. For this reason the key-note of excision in these cases must be conservation of as much lung tissue as possible during the operation.

Even symptomless cysts must be excised because it is impossible to predict when trouble may arise. Symptoms varying from minor cough to severe dyspnoea or even sudden death may ensue at any time. The dangers of infection, of haemorrhage and of a possible malignant change have all been emphasised in the body of the article.

Spontaneous disappearance of these cysts have been recorded (Cooke and Blades, 1952; Lloyd, 1949) but it is too rare to be depended upon.

Methods short of excision of the affected area are poor second bests. Thus, for example, needle aspiration of the air containing sacs, injection of sclerosing fluids, Monaldi's type of drainage, continuous suction drainage of associated pneumothorax, etc. have all been adopted. Needle aspiration is a dangerous procedure, as sudden tension pneumothorax of a dangerous type may arise and such a procedure should never be attempted without facilities for immediate thoracotomy and closed intercostal drainage. Disasters have occurred by not observing these principles (Raman, 1941).

Injections of chemicals are uncertain in their results and caustics like silver nitrate, lipiodal or concentrated glucose saline carry the risk of infection. Indeed these methods came to be adopted in the early days when thoracotomy was a hazardous procedure. Now that thoracotomy and extended intrathoracic procedures have become much more safe, excision of the diseased area is the ideal.

The aetiology of these cysts is not yet clearly known and as such ideas regarding classification are numerous and very confusing. As many as 36 pseudonyms or even more are found in the literature. A simple classification that has been suggested by Cooke and Blades (*loc. cit.*) has been adopted.

Summary

Five cases of giant cysts of the lung have been reported in detail. In one of these, attacks of spontaneous pneumothorax which became ultimately persistent and chronic were the main trouble. This was the only female patient in the series. In all the others, the consequences of infection brought the patients to the hospital. In fact, all these four cases were sent in as lung abscesses.

The case with spontaneous and persistent pneumothorax (Case 1) developed infection. Such a complication in non-tuberculous pneumothorax is considered unusual.

All the five cases in the series were treated by excision—excision of the cyst 1 (Case 1); lobectomy 1 (Case 2); and segmental resection 3 (Cases 3, 4, and 5) —and they are all doing well, the earliest in the series to be operated was on 9-7-51 and the latest on 9-11-52.

Acknowledgment

My thanks are due to Dr. P. Arunachalam, Dr. R. Subramaniam and Dr. U. Mohan Rau who referred the various cases; to Dr. G. D. Veliath and Dr. D. Sundarasiva Rao of the Department of Pathology, Stanley Medical College, for the microphotographs and the reduction prints of skiagrams and to Dr. A. Daniel, Radiologist, Stanley Hospital, for the skiagrams.

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ACTION OF DESOXYCORTICOSTERONE ON GASTRIC SECRETION

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The most important action of desoxycorticosterone in the body, is known to be on the sodium, chloride and water metabolism. When administered intramuscularly (usually as acetate dissolved in oil), its action is mainly manifested as an increased concentration of sodium and chloride in the body fluids, a reduction of potassium, and an increase of the plasma volume. In view of its important effect on the chloride and water metabolism, and also because plasma chloride forms the ultimate source of gastric hydrochloric acid, the present investigation was taken up in order to study the action of this steroid hormone on the gastric secretion.

MATERIAL

Forty-eight persons were subjected to investigation in this series, of whom eight were females, and forty males. Age varied between 13 years and 60 years. There were 6 healthy females and 23 healthy males, the rest being hospital patients mostly suffering from some gastro-intestinal disorders. In subjects convalescing from cholera individuals were subjected to investigation only after they were completely free from signs and symptoms of that disease and were receiving full normal diet. Majority of the healthy persons belonged to the ward assistants of the hospital and a few to the nursing staff.

METHODS

The investigation started with the carrying out of a fractional test meal examination of the gastric contents in the usual way, (using barley gruel as the test meal) in the morning, after a good night's rest. A sample of blood was collected at the same time for the estimation of the plasma chloride. The urine of the previous 24 hours was also collected for the estimation of its chloride content. In 28 persons, instead of carrying out the fractional test meal examination, the sample of gastric secretion after histamine injection was collected. The residual gastric juice was removed, and measured. An injection of 0·25 mg. of histamine acid phosphate was given subcutaneously and half an hour later the whole of the gastric contents was collected, and measured. Immediately after the collection of the above samples, which served as the control, 10 mg. of desoxycorticosterone acetate (DOCA) in oil was injected intramuscularly in 45 persons. In 3 cases, a single dose of 5 mg., was given. Effects of repeated injections of DOCA were not studied.

The samples for determining the effects of DOCA which formed the second series, were collected in the same way as above, 24 hours after the administration of the steroid. A third sample, where possible, was also collected after 96 hours.

A period of 24 hours was allowed to pass after the injection of DOCA before the estimation of the effect of this steroid, because of the slow absorption of the steroid from an oily solution. A period of 96 hours was allowed to pass before the third samples were collected. These were to serve as the second controls. The expectation was that the effect of the steroid of complete passing off on the gastric secretion would be eliminated by that time. However, this was not so in all the cases. This will be evident from the subsequent analysis of the data.

Gastric acids were expressed as ml. of N/10 NaOH, required to neutralise 100 ml. of the juice. In cases of the fractional test meals, only the peaks of the free HCl curves were taken into consideration for the comparative study. Total gastric and plasma chlorides were estimated by Whitehorn's (1920-21) method, and expressed as NaCl. Only the gastric chloride was estimated in the samples obtained after histamine injection.

All subjects, in this investigation, were on full-meal hospital diet for a Bengalee, except in cases of one ascites and a few specified peptic ulcer patients who were having diet of a low salt content. These have been duly recorded in the tables.

RESULTS

Action of DOCA on the fluid volume of the gastric secretion—Its effect on the quantity of the gastric secretion was studied by measuring the amount of both the residual juice and the gastric secretion obtained after histamine injection, in 22 healthy persons, before and after the administration of DOCA (Table 1). The ideal method would have been to collect the total quantity of juice secreted in 24 hours for comparison, but this was not found practicable.

TABLE I—SHOWING EFFECT OF DOCA ON THE VOLUME OF GASTRIC JUICE AND ITS ACID CONCENTRATION IN RELATION TO PLASMA CHLORIDE AND GASTRIC CHLORIDE IN HEALTHY PERSONS

		JUST BEFORE DOCA							24 HOURS AFTER DOCA—10 mg. I.M.							96 HOURS AFTER DOCA				
			Gastric Analysis (H. J.)							Gastric Analysis (H. J.)						Gastric Analysis (H. J.)				
No.	Age in years and sex	Plasma chloride	R.J (c.c.)	H.J (c.c.)	F.A.	Gastric Chloride %	Gastric Chloride g.	Urine Chloride g.	Plasma Chloride	R.J (c.c.)	H.J. (c.c.)	F.A.	Gastric Chloride %	Gastric Chloride g.	Urine Chloride	R.J (c.c.)	H.J. (c.c.)	F.A	Gastric Chloride %	Gastric Chloride g.
1.	13 F.	—	55	60	65	0·67	0·40	—	—	45	35	·55	0·56	0·19	—	0	35	24	0·27	0·23
2.	25 F.	580	51	42	44	0·68	0·29	9·90	620	32	42	41·5	0·76	0·32	4·80	57	64	32	0·80	0·52
3.	25 F.	—	72	58	101	0·80	0·46	—	—	60	34	95	0·84	0·28	—	50	30	87·5	0·86	0·25
4.	26 F.	560	65	80	43	1·52	1·20	7·07	600	41	38	64	1·48	0·56	6·00	35	30	54	0·78	0·23
5.	24 M.	580	105	87	32·5	—	—	—	640	47	58	0	—	—	—	35	194	32·5	—	—
6.	24 M.	—	35	40	76	0·82	0·33	—	—	30	25	6·5	0·64	0·16	—	25	23	52·5	0·68	0·15
7.	22 M.	—	90	78	82·5	0·84	0·65	—	—	60	66	2·5	0·66	0·43	—	65	50	0	0·66	0·33
8.	27 M.	600	52	25	11	0·42	0·10	9·70	580	37	35	20	0·50	0·18	6·50	35	28	55	0·88	0·25
9.	28 M.	560	46	56	44·5	—	—	—	580	31	42	45	—	—	—	40	38	50	—	—
10.	28 M.	540	32	40	0	0·54	0·22	11·40	580	30	38	0	0·68	0·26	9·50	—	25	16·5	0·72	0·18
11.	28 M.	—	93	66	55	0·64	0·42	—	—	78	70	31·5	0·60	0·42	—	65	50	27·5	0·68	0·39
12.	30 M.	480	95	75	9	—	—	—	620	64	45	44	—	—	—	136	46	49	—	—
13.	30 M.	600	73	95	0	0·36	0·34	16·80	520	52	58	26	0·50	0·29	11·10	45	50	0	0·34	0·17
14.	32 M.	560	52	54	0	—	—	—	560	50	38	35·5	—	—	—	60	40	0	—	—
15.	35 M.	520	45	65	0	—	—	—	560	27	42	62·5	—	—	—	17	25	59·5	—	—
16.	30 M.	580	45	41	29	0·56	0·23	12·30	550	40	42	31·5	0·56	0·24	10·30	37	34	22·5	0·58	0·20
17.	40 M.	—	45	50	60	0·71	0·35	—	—	35	40	57	0·77	0·31	—	30	25	0	0·60	0·15
18.	35 M.	600	32	27	67·5	0·70	0·19	3·90	560	25	30	0	0·30	0·09	7·50	10	68	72	0·76	0·52
19.	45 M.	580	50	80	0	—	—	—	600	45	48	0	—	—	—	18	27	0	—	—
20.	50 F.	580	50	59	22	1·06	0·62	2·30	600	72	60	26	1·30	0·78	1·15	60	68	68	0·72	0·49
21.	28 M.	560	66	74	69	0·70	0·59	13·30	580	74	80	79	0·72	0·58	9·10	30	32	61	0·66	0·21
22.	29 M.	560	18	64	17·5	0·56	0·36	12·18	620	40	28	38·5	0·76	0·22	5·80	1	10	0	0·70	0·07

Key: R.J. = Residual gastric juice. H.J. = Total volume of gastric secretion obtained after histamine injection. F.A. = Free hydrochloric acid concentration in H.J. Plasma chloride, mg./100 c.c. Urine Chloride = Total quantity of Chloride, in grams, in 24 hours' urine.

Quantity of the resting juice appreciably decreased, 24 hours after the injection of DOCA, (by −5 ml. or more) in 17 persons (77·3 per cent), and increased (by + 5 ml. or more) in 3 persons (13·6 per cent), whereas the amount of gastric juice after histamine decreased (by −5 ml. or more) in 14 persons (63·6 per cent), and increased (by +5 ml. or more) in 3 persons (13·6 per cent). In the remaining subjects there was no appreciable change (i.e. less than ±5 ml.). Amongst the cases where appreciable reduction occurred, the average amount was by 29·1 per cent of the resting juice, and 36·6 per cent of the gastric juice after histamine. There was an appreciable decrease (by −5 ml. or more) of the volume of gastric secretion in even a larger number of persons, 96 hours after the injection of DOCA in oil. Nineteen persons (86·3 per cent) showed a decrease of the resting juice and 16 persons (72·7 per cent) that of the gastric juice after histamine.

The decrease of the secretion did not appear to have any particular relationship to age or sex, or to changes in the acidity of the juice. Some association of the former with the decrease of the quantity of total gastric chloride as well as the increase of the plasma chloride is, however, indicated (Tables 2 and 3).

TABLE 2—SHOWING RELATIONSHIP BETWEEN GASTRIC SECRETION AND PLASMA CHLORIDE, 24 HOURS AFTER DOCA

Resting Juice / *Plasma Chloride*	*Increase*	*Decrease*	*Total*
Increase	3	8	11
Decrease	0	4	4
Total	3	12	15

TABLE 3—SHOWING RELATIONSHIP BETWEEN GASTRIC SECRETION AND TOTAL GASTRIC CHLORIDE, 24 HOURS AFTER DOCA

Histamine Juice / *Gastric Chloride*	*Increase*	*Decrease*	*Total*
Increase	3	1	4
Decrease	3	8	11
Total	6	9	15

The Student's paired *'t-statistics'* were found to be highly significant, −3·11 for the residual juice and −3·95 for histamine juice, with 21 degrees of freedom in both cases. The quantitative reduction in these cases is highly significant and may not, as such, be attributed to sampling fluctuations.

Kendall's rank correlation methods applied for measuring association between decreases in quantity of gastric secretion and quantity of gastric chloride in 24 hours shows a correlation coefficient of 0·27 between the resting juice and gastric chloride, and 0·48 between gastric juice after histamine and gastric chloride, which though not statistically significant do not appear to be negligible.

Action of DOCA on concentration of gastric HCl—This was studied in all the 48 persons investigated in this series (Tables 1 and 4). The acid concentration was increased in 22 persons, decreased in 23 persons, and no change occurred in 3 persons. Average increase of acidity, 24 hours after injection, per person in the first group was by +23·2 ml. or 75·48 per cent, and average decrease in the second group was by −22 ml. or 40·2 per cent. Excluding the changes less than ±5 c.c. as insignificant, and more than ±25 c.c. as drastic which might be due to some additional and unaccounted for factors, there remained 11 persons in the first group with average increase of acid concentration per individual, by +15·36 ml. or 33·46 per cent and 15 persons in the second group with average decrease by −12·93 ml. or 27·01 per cent. Total number of persons showing a change of acid concentration by ±5 ml. or more, after DOCA, in this series was 39 (81·25 per cent).

Age did not appear to have any influence on the variation of acid concentration after DOCA in this series, while females showed slightly greater tendency to have decreased acid concentration under its influence. The action either way was produced both in healthy and diseased persons.

Action of DOCA on the gastric chloride and its relation to HCl concentration—Percentage and net quantity of total gastric chloride in the gastric juice after histamine were estimated in 16 healthy persons. Of these 11 persons (68·75 per cent) showed a decrease, and 5 persons (31·25 per cent) an increase of its total quantity, 24 hours after the administration of DOCA. On the whole, DOCA diminished the quantity of gastric chloride, and it being in the oily solution, the decrease was even more marked 96 hours after the injection than after 24 hours. The average quantity of total chloride expressed as NaCl, per 100 ml. of the juice, were, 0·751 g., before injection, 0·736 g., 24 hours after injection, and 0·638 g., 96 hours after the injection of DOCA in oil. Thus the decrease was by −0·015 g., after 24 hours, and −0·113 g., after 96 hours, per 100 c.c. of the juice. As there also occurred a simultaneous decrease of the quantity of the secretion, the net result was a more marked decrease individually than would be apparent from above. Thus the average decrease of the total gastric chloride in the gastric juice after histamine, per individual, 24 hours after injection, was by −0·09 g., or 21·35 per cent.

The quantitative decrease in the total chloride content of the gastric juice occurred even in persons showing increased concentration of the hydrochloric acid. Actually 4 out of 5 cases in this group showing an appreciable increase of the hydrochloric acid concentration had a quantitative reduction of the

total gastric chloride. On the other hand in the majority of persons, the chloride concentration of the juice after DOCA, as evidenced by its increased or decreased percentage in the secreted fluid, greatly varied, and often showed a similar variation with that of the concentration of the HCl in it. Eighty per cent of those showing a definite increase in the concentration of the gastric hydrochloric acid also showed an increased concentration of its chloride, while 83·3 per cent of those having an appreciable decrease of the gastric acid concentration also had a decrease of their gastric chloride percentage (Table 4).

TABLE 4—SHOWING RELATIONSHIP BETWEEN CONCENTRATIONS OF GASTRIC CHLORIDE AND GASTRIC HCl

Concentration of gastric chloride / *Concentration of gastric HCl*	*Increased*	*Decreased*	*Total*
Increased appreciably	4	1	5
Decreased appreciably	1	5	6
Total	5	6	11

For the test of significance of the decrease of quantity of gastric chloride in 24 hours, it was found that $t = -1{\cdot}98$ with 15 degrees of freedom and that for the change in 96 hours, $t = -2{\cdot}03$ with 15 degrees of freedom also. Although the significance is not established, it appears that the average decrease in gastric chloride in 96 hours is greater than the corresponding change in 24 hours. Introduction of some amount of heterogeneity is not unlikely in the observations noted for the 96 hours interval, which might have lowered the value of the t in this situation.

Increased urinary excretion of water and chloride after DOCA—The total amount of urine in 24 hours and also its chloride content decreased in majority of the cases but it was markedly increased in one person and moderately so in 5 others. In two of the latter it was associated with increased excretion of the urinary chloride, while in four others chloride was decreased in the urine. All these latter persons except one, showed a decrease of the gastric acid concentration. None of these persons were in normal health, while four of them were having low salt diet for some time before the injection of DOCA (Table 5).

DISCUSSION

Desoxycorticosterone is known to cause an increase in the reabsorption of sodium in the renal tubules and thereby diminish the loss of sodium, chloride, and water from the body by the kidneys (Houssay *et al*, 1951). But its action on the output of water and electrolytes with regard to the products of the secretory glands is not clear. In the present observation, where the action of this steroid hormone on the gastric secretion of the healthy persons was studied, it was found that in the majority of persons the quantities of the gastric secretory fluids, obtained both as the residual juice and also as the juice obtained after the histamine injection, were appreciably decreased as a result of the administration of DOCA. These changes were, statistically, highly significant. The effect of one injection lasted for at least 96 hours. This change was found to be associated with an increase of the plasma chloride and a decrease of the total gastric chloride. Thus, the effects of the administration of this steroid on the secretion of the fluid and the chloride into the stomach closely resemble its effects on the renal excretion of these substances.

The action of DOCA on the concentration of hydrochloric acid in the gastric juice appeared to be more complicated. An appreciable change, either an increase or decrease, was found to have occurred in both health and disease in the majority of the persons studied. However, cases, showing either an increase or decrease, were observed with an almost equal frequency. Concentration of the acid was often found to be related to that of the chloride in the gastric fluid and variations in the former were usually associated with similar variations in the latter. Increase or decrease of the acid concentration occurred, to some extent, according to increase or decrease of the chloride concentration, and the latter changed according to the alterations of the ratio which had previously existed between the secretion of the water and the chloride, although both might have individually decreased under the influence of the steroid. Desoxycorticosterone diminished the secretions of both the water and the chloride of the gastric juice in the majority of the persons, but the proportions of their diminutions were often unequal.

Urinary excretion of the chloride decreased under the influence of this steroid in the majority of the persons in this series, but in a few persons there was an increased excretion of the chloride through the kidneys. Most of the latter persons also showed a simultaneous decrease of their gastric acid concentration.

In view of these and above findings, a suggestion of an adrenocortical influence being one of the factors in the control of the secretion of the gastric chloride and water may not be out of place. Similar control in conjunction with the hypophysis has been believed to exist by Addis *et al* (1918), and Silvette and Britton (1938) for normal renal water secretion.

Regarding the occasionally increased output of the chloride and the water after the administration of DOCA, as observed in this series, it may be stated that similar increase with other cortical steroids has also been recorded by other observers. Thorn *et al* (1941), and Ingle and Thorn (1941) demonstrated in acute experiments in rats that the administration of cortisone and compound F resulted in a temporary increase in

TABLE 5—SHOWING EFFECT OF DOCA ON GASTRIC HCl CONCENTRATION, IN RELATION TO THE URINARY CHLORIDE AND VOLUME AND ALSO THE PLASMA CHLORIDE (GASTRIC JUICE OBTAINED BY F.T.M. EXAMINATION IN ALL EXCEPT SIX PERSONS)

No.	Age and Sex	BEFORE DOCA				DOCA (mg.)	24 HOURS AFTER DOCA					
		F.A.	Plasma Chloride	Urine (24 hrs.) c.c.	Urine (24 hrs.) Chloride in grams		F.A.	Plasma Chloride	Urine (24 hrs.) c.c.	Urine (24 hrs.) Chloride in grams	F.A. 90 hrs. after DOCA	
HEALTHY PERSONS												
1	40 M.	36	570	1364	9·50	10	74·5	600	1137	7·70	—	
2	28 M.	30	570	1364	10·36	10	22·5	570	995	5·60	—	
3	27 M.	49·5	620	1428	11·90	10	73·5	—	1395	—	—	
4	50 M.	6	620	1488	3·20	10	24·5	580	992	4·30	—	
5	22 M.	66·5	540	1130	3·30	10	50·5	570	1023	4·00	66	
*6	24 M.	48	530	558	8·90	10	27·5	580	496	6·40	28·5	
*7	55 F.	30·5	580	1085	10·85	10	0	620	930	5·20	49	
SUBJECTS CONVALESCING FROM CHOLERA												
8	30 M.	20·5	496	1137	7·90	5	27	—	1279	5·70	—	**
*9	55 M.	0	540	1085	—	10	50	560	930	—	15·5	
*10	30 M.	0	560	—	—	10	85	620	—	—	—	
11	20 M.	18·5	—	—	—	10	0	—	—	—	12	
*12	28 M.	20	540	1150	1·80	10	0	610	950	5·70	12	
*13	40 M.	0	600	1230	10·30	10	0	580	1085	17·71	—	
PATIENTS WITH DUODENAL ULCER (LOW SALT DIET)												
14	34 M.	73·5	528	1818	11·89	10	97·5	520	1421	9·20	—	
15	29 M.	64	600	1421	16·20	10	74	—	1421	1·42	—	
16	50 M.	107·5	552	1364	4·87	10	123·5	540	1137	3·18	100	
17	35 M.	86	540	1364	15·00	10	74	580	1364	12·20	—	
18	60 M.	77	400	992	4·96	10	49·5	517	1137	3·40	42·5	**
19	52 M.	77·5	500	744	3·70	10	65·5	580	992	2·30	—	**
20	32 M.	72	500	1085	6·60	10	6·4	500	2480	19·80	39	**
PATIENTS WITH MISCELLANEOUS DISORDERS												
21	40 M.	48	580	620	5·30	10	32	540	1240	11·40	—	** Chronic Gastritis
22	30 M.	33	540	992	7·50	10	20	560	1270	4·30	—	** Ascites
23	20 M.	11	564	1364	8·18	5	6	—	806	4·40	—	Hemiplegia
24	50 M.	11	560	248	1·40	10	5	580	248	2·80	—	Dyspepsia
25	46 M.	43·5	560	1364	9·00	10	52·5	560	1364	7·60	51·5	Gastritis
26	32 F.	31·5	570	1478	8·12	5	34	570	909	8·10	—	Erosion cervix

Key: FA—Peak of free HCl curve in F.T.M. examination. **=Volume of urine increased after DOCA.
*=Free HCl concentration calculated in secretion obtained after histamine injection.

the urinary excretion of sodium, chloride and potassium Similar results have also sometimes been observed in the dog (Lewis *et al*, 1942). Soffer *et al* (1950) and Levitt and Bader (1951) found in patients having a low salt diet, an increase of extracellular fluid after cortisone or corticotrophine. After reaching the peak there was spontaneous reduction of extracellular space, partly accompanied by an increased urinary excretion of sodium and water. The influence of cortisone on electrolyte and water balance is approximately 1/50 of that of desoxycorticosterone (Soffer, 1952). It may be noted here that four out of the six persons, who had an increased output of urine after DOCA, were having low salt diets as part of their treatment. All of them, except one, also recorded a decrease in their gastric acid concentration.

SUMMARY

Desoxycorticosterone had the effect of appreciably diminishing the quantity of the gastric secretory fluid, along with quantitative diminution of the total gastric chloride, also an increase of the plasma chloride, in the majority of the persons. In this respect, the effects of the administration of this steroid, on the output of water, and the chlorides, both through the gastric secretory glands and the kidneys, were found to be somewhat similar. It also produced variations in the concentration of the gastric hydrochloric acid which were manifested, both as its increase or decrease, in different persons. But the numbers showing either increase or decrease were nearly equal. In the majority of the persons, changes in the acid concentration exceeded ±5 c.c. These variations in the acid concentration were mostly related to similar variations of the gastric chloride concentration. The latter variations occurred due to alterations in the output of the gastric water and the chloride in unequal proportions, though both diminished individually, under the influence of DOCA, in the majority of the persons.

The above facts point to the possibility of the desoxycorticosterone, or more broadly speaking, of the suprarenal cortex mineralocorticoids having an important controlling influence on the secretions of water and the chloride of the gastric juice.

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SOME OBSERVATIONS ON THE TOXICITY OF RAUWOLFIA PREPARATIONS AS SOLD IN THE MARKET FOR THE TREATMENT OF HYPERTENSION

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Rauwolfia serpentina ("Sarpagandha" or "Chota Chand") has been found to be a useful remedy in high blood pressure. Alcoholic liquid extracts and tinctures containing varying quantities of the alkaloidal active principles as well as tablets made from the root of the plant, are being prescribed to relieve symptoms of hypertension and are freely sold in the market. A few alkaloids have been isolated from the plant and their pharmacological properties have been studied and reported (Chopra *et al*, 1933; Chopra and Chakravarti, 1941, and others). The author also studied the actions of the individual alkaloids and found them to be varying in actions. In a previous (1941) communication the author brought forward experimental evidence showing that the reduction in blood pressure in experimental animals (especially in those where blood pressure had previously been raised with pressor substances) was much more with the alcoholic extracts containing all the alkaloids than when the individual alkaloids of the plant were separately injected. It was also then suggested that these alcoholic extracts of the plant probably contained besides the alkaloids so far isolated, other principles of synergistic nature having hypotensive properties which also contributed to the fall in blood pressure. Moreover it has not been possible so far to use the proximate principles of *Rauwolfia serpentina* clinically and hence the alcoholic preparations and tablets containing all the active principles of the plant, are prescribed in high blood pressure.

The drug is not devoid of toxicity. The author (1941) had reported toxic symptoms in laboratory animals injected with sublethal and lethal doses of the individual alkaloids as well as the alcoholic extract of the plant. The drug has a depressant action on the

heart and has been found to produce bradycardia on prolonged use in hypertension.

No biological method of assay has so far been suggested for Rauwolfia preparations to have a check on the content of active principles when alcoholic extracts or pills are manufactured by pharmaceutical concerns for therapeutic use.

The present investigation was mainly undertaken to study the toxicity of the market preparations of *Rauwolfia serpentina* and an attempt has also been made to devise a suitable, easy method of biological standardisation of the alcoholic extract of the plant. This would help in arriving at a correct dose and throw considerable light on the safety margin of the drug while being used in clinical practice.

The author has used in his experiments to be detailed hereafter two market preparations, (i) a liquid extract with a total alkaloid content of 0·29 per cent and the percentage of alcohol is 60; and (ii) a tincture with a total alkaloidal content of 0·5 per cent and the percentage of alcohol is 80.

Toxicity of these two preparations of *Rauwolfia serpentina* was investigated in two different species of experimental animals which are also easily available, *viz.*, pigeons and dogs. The toxic symptoms were carefully studied in these animals.

Study of Toxicity in Pigeons

Pigeons have been found suitable animals for the study of toxic symptoms of drugs. Graded doses of both the liquid extract and the tincture of *Rauwolfia serpentina* were injected intravenously into the wing vein of the pigeons. The animals were immediately returned to cages after the injections and symptoms observed.

Results and Inferences:

1. *Liquid Extract of Rauwolfia serpentina with total alkaloidal content 0·29 per cent.*

Absolute lethal dose per kg. pigeons = 3·5 c.cm. or equivalent to 10 mg. total alkaloids.

2. *Tincture Rauwolfia serpentina with total alkaloidal content 0·5 per cent.*

Absolute lethal dose per kg. pigeon = 2·6 c.cm. or equivalent to 13 mg. total alkaloids.

Observations:

The symptoms following the intravenous injections in pigeons were almost immediate and marked. Pigeons injected with lethal doses showed signs of air hunger and died within a few seconds of the injection or some times even before the needle of the tuberculin syringe could be taken out of the wing vein. Respiratory failure seemed to be the cause of death in these animals. Temporary cessation of respiration was a marked feature in animals injected with sublethal doses of the drug. Such animals slowly recovered and respirations were found to be slow and shallow for some time. Other nervous symptoms indicative of affection of the cerebellum such as loss of equilibrium, inability to maintain upright posture, etc., were also seen. The injected animals looked dull and dazed and then became unconscious with slow respirations. The condition resembled natural sleep and sleep intervals varied in different animals. Those injected with doses bordering lethal doses slept for more than 8 to 10 hours whereas others injected with smaller doses slept for 2 to 3 hours. Before the animals awoke most of them vomited a number of times. In between the acts of vomiting, the pigeons were found to sleep. Late deaths usually within 24 hours, were seen in a few animals injected with large doses of the drug.

From the toxic symptoms seen in these birds, it appears that the drug has a predilection for the respiratory centre and the cause of death as stated before is respiratory failure. The cessation of function of the respiratory centre might also be due to anaemia of the brain, the centre being deprived of adequate blood supply due to the drug reducing the blood pressure, failed to maintain its normal activity. Toxic doses appear to depress the activity of the cerebrum and also to derange cerebellar functions. Like morphine, *Rauwolfia serpentina* seems to depress certain medullary centres such as the respiratory and the vasomotor and stimulate others like the vagal and the vomiting. The actions of the drug on the vasomotor and the vagal centres have also been investigated by me and will be reported in a later communication. It appears that the drug while exciting some centres depresses others during the same phase of action.

Two pigeons were decerebrated. The upper brain was sectioned at the level of the cerebral peduncles—the birds being lightly anaesthetised with ether. Sublethal doses of the alcoholic extracts of the drug were intravenously injected into the decerebrate animals. Results were interesting in the sense that such animals did not have a prolonged sleep as was seen in the intact animals. It may not be quite wrong, therefore, to suggest at this stage that the drug probably induces sleep by depressing the higher brain or by acting on the sleep centres in the subthalmic regions like the barbiturates.

Study of Toxicity in Dogs

A few experiments with dogs were undertaken to evolve a suitable method of standardisation of different market preparations of *Rauwolfia serpentina*. Determination of a lethal dose was first decided upon and it was found that the dogs consumed large quantities of the drug (about 500 to 600 cc. of 1:10 of the liquid extract) before the animals could be killed, particularly those preparations containing a low percentage of total alkaloids of the plant. The author, therefore, modified his experiments to see what quantity of a particular market preparation of *Rauwolfia serpentina* would be required to effect a 25 per cent reduction in the level of the original arterial pressure on the analogy

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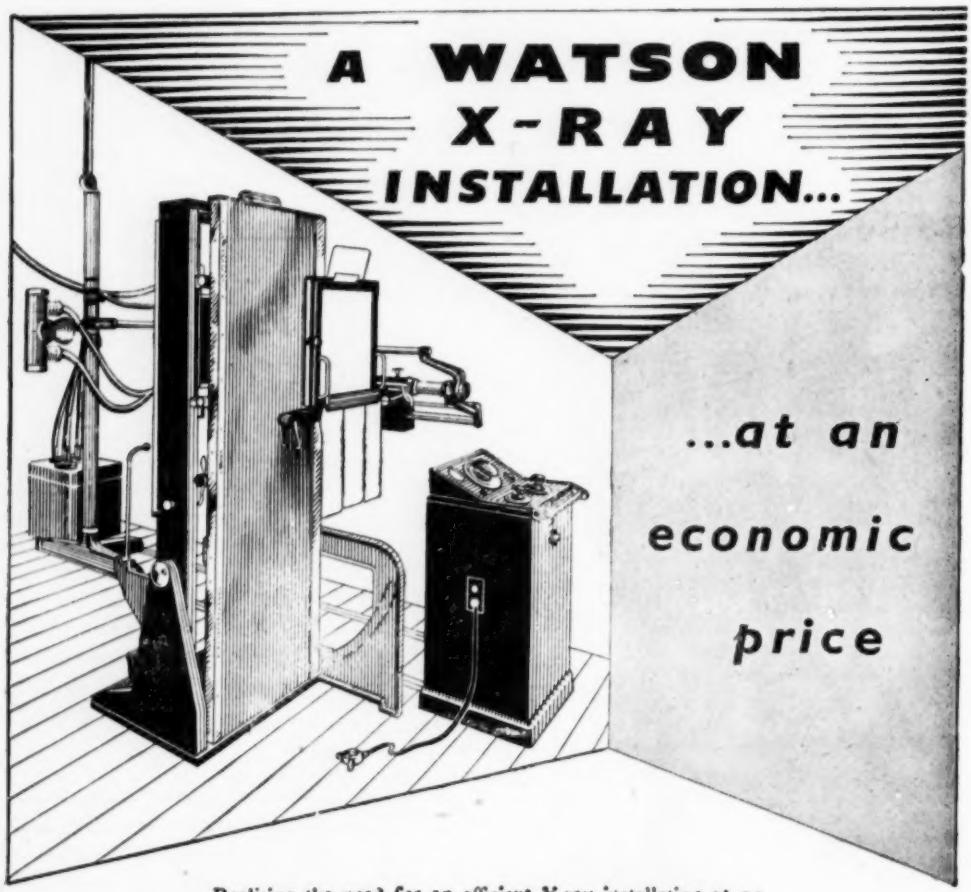

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of actual hypertensive cases. To take one concrete example, a person with a systolic pressure of 200 mm. Hg. and showing symptoms of hypertension might be relieved of such symptoms if the blood pressure is brought down to 150 mm. Hg. (25 per cent reduction) by a suitable Rauwolfia preparation. A constant systolic pressure of 150 mm. Hg. may be considered pathological in an otherwise normal healthy adult but these cases of hypertension are used to high systolic pressures and if the reduction of pressure is more than 25 per cent, the person might not feel fit to attend to daily routine of life.

This ratio of the lethal dose to a dose bringing the systolic pressure down by 25 per cent of the original level has a distinct applied value as a suitable therapeutic dose can be worked out from this, keeping the 'safety margin' in view.

Experiments were accordingly devised in dogs. Both the liquid extract and the tincture were continuously infused per femoral vein of the dog in a dilution of 1:10. The rate of infusion was 3 to 4 c.cm. per minute.

The dogs were first lightly anaesthetised with ether and then chloralose (0·1 g. per kg.) was intravenously injected to keep the animals under its effects during the entire period of the experiment. The arterial blood pressure was recorded from the common carotid artery. Chloralose in suitable anaesthetic dosage does not significantly depress the respiration and so there was no need of artificial respiration in the animals.

The blood pressure was carefully watched and as soon as the desired reduction (25 per cent) in blood pressure level was reached, the total quantity of the drug infused, was recorded. The infusion was then continued to determine the lethal dose.

OBSERVATIONS:

The fall in blood pressure was marked with the tincture containing 0·5 per cent total alkaloids, whereas the fall due to the liquid extract containing 0·29 per cent total alkaloids was slow and gradual. After the arterial pressure had come down to 70 to 60 mm. Hg. further reduction below this level was very slow. The hypotensive effect was found to be marked in animals whose blood pressure was above 100 mm. Hg. In most cases after the arterial pressure had come down to 50 or 60 mm. Hg. a further reduction was not marked for some time though the intravenous infusion was continued as usual. A primary respiratory failure was found to be the cause of death in these animals followed by stoppage of heart midway between systole and diastole. The blood pressure was found to be at 40 to 55 mm. Hg. when respiration failed in these dogs.

As stated before, primary respiratory failure is the cause of death in the animals. The respiration continued even when the blood pressure came down as low as 40 or 50 mm. Hg. In some cases the respiration failed at this level of blood pressure which was kept up for a little while even after cessation of respiration. It, therefore, appears from these experiments that Rauwolfia has a selective depressant and ultimately a paralysing action on the respiratory centre, irrespective of the effect of lowered blood pressure as it may be well argued that respiration was found to be normal in these animals both in rate and rhythm even when arterial pressure came down to 50 or 40 mm. Hg.

RESULTS AND INFERENCES

	(*A*) *Liquid Ext. of R. serpentina with total alkaloidal content 0·29 per cent*	(*B*) *Tincture of R. serpentina with total alkaloidal content 0·5 per cent*
(a) Actual quantity (average of 4 expts.) of the extract liquid to kill a dog weighing about 5 Kilos	38 c.cm.	16·8 cm.
(b) Quantity (average of 4 expts.) infused to bring down the original B.P. to 25 per cent reduction level	4·6 c.cm.	2·25 c.cm.
(c) Ratio of a/b	8·4	6·6
(d) Absolute lethal dose per kg. dog	7·3 c.cm.	3 c.cm.
(e) Probable lethal dose for a man of 60 Kilos (on weight basis)	438 c.cm. or 14.6 fl. oz.	180 c.cm. or 6 fl. oz.
(f) Probable dose to bring down 25 per cent reduction of systolic pressure	about 2 fl. oz.	1 fl. oz.
(g) Ratio of e/f	7·9	6
(h) Ratio of Lethal dose in man (e)/*Therapeutic dose	233·6	192

*30 minims for (A) and 15 minims for (B)

DISCUSSION

The toxicity figures of these two market preparations of Rauwolfia as worked out on two different species of animals are interesting in the sense that the lethality figures are not directly proportional to their total alkaloidal contents. The total alkaloidal content of the tincture is about twice that of the liquid extract. The toxicity of a particular drug has a quantitative relationship to the content of its active principle or principles. The tincture with 0·5 per cent total alkaloids is twice as toxic as the liquid extract with 0·29 per cent total alkaloids in the dogs. This relationship does not, however, hold good with the pigeons where the tincture is found to be only 1·3 times as toxic as the liquid extract. Pigeons on the whole are found to be more susceptible to Rauwolfia preparations than the dogs.

The results of experiments as seen in laboratory animals can seldom be expected in human beings when such drugs are tried on them, yet, these laboratory experiments do throw some light on the probable actions of those drugs in human subjects. Some of the

observations made on these experiments are, however, interesting. 4·0 c.cm. of the liquid extract were required for the 25 per cent reduction in blood pressure in dogs weighing on an average 5 Kilos. If this is applied to 60 Kilos man—about 2 fluid ounces of the drug will probably be required to effect the same reduction in blood pressure in man and also to keep it at that level for some time. A total dose of 2 fl. oz. or 10 drachms will certainly produce toxic symptoms in the individual if administered all at a time. It will therefore, be advisable to administer the liquid extract in single doses of 30 minims, three times a day and the total dosage of 10 drachms can thus be spread over 10 days. Similarly in case of the tincture, a total dosage of about 1 fl. oz. can be spread over 10 days with 10 minims or less three times a day in a suitable case of hypertension. From the continuous intravenous infusion experiments in dogs it seems that the drug is fairly rapidly destroyed by the animal tissues as it was observed that when the intravenous infusion was stopped for some time during the course of the experiment, the blood pressure again rose. It is, therefore, desirable that small doses at suitable intervals should be given to cases of hypertension to reduce the blood pressure and then continued which will help maintenance of the systolic pressure at a reasonable low level. Large single doses for a short period are apt to produce symptoms of poisoning such as nausea, vomiting, slow and irregular pulse and in severe cases, shallow and irregular respirations—which symptoms have already been produced and seen in these experimental animals. Injudicious use of therapeutically potent drugs in clinical practice should never be encouraged because of their high toxicity and Rauwolfia is no exception to it. No hard and fast rules can, therefore, be laid down as to their dosages and frequency of administration. The quantity of the drug to be given in a suitable case should always be worked out from the individual requirements, taking into consideration factors like idiosyncrasy, susceptibility, ultimate tolerance, etc., but at the same time a chance of precipitation of toxic symptoms must never be lost sight of.

SUMMARY

(1) The toxicity of two market preparations of *Rauwolfia serpentina*—a liquid extract and a tincture with varying total alkaloidal contents has been studied in laboratory animals.

(2) Toxic symptoms such as vomiting, unsteady gait, slow irregular respiration, bradycardia and unconsciousness resembling deep sleep have been seen in the injected animals. Death was due to respiratory failure.

(3) Lethal doses and doses which will reduce the systolic blood pressure of dogs by 25 per cent have been determined.

(4) Probable doses of Rauwolfia preparations which will effect a 25 per cent reduction of systolic blood pressure in hypertensive subjects have been suggested.

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PSYCHOLOGY OF V. D. PATIENTS

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Venereal diseases have been studied almost from all standpoints, but truly speaking scant attention has been given to the psychological make up or the personality analysis of the V. D. patients, even up to the present time.

We have attempted here to pick up cases which represent psychologically the true cross-section of the total mass of V. D. patients that visit us either at the hospitals or in our private clinics.

Below, one by one, we give the various psychological types of V. D. patients whom we meet.

Group I is represented by S, a servant by occupation. He is poor, illiterate, and ignorant and has come many miles off his family and home to live and earn money. He is very ignorant about the vile crafts of this world, and at the same time, he is forced to live, for a pretty long time, a life of complete sexual abstenance. These two together make him an easy prey to the suggestions of his newly made town friends. He is taken to a cheap house of ill fame, and as a consequence develops V. D. He is typical of the group of ignorant, illiterate, and ill paid servants, maid servants, coolies, and manual workers of the city, who come to stay in the city, from long distances to earn their livelihood. In this group the scarcity of any other alternative healthy pastime or diversion also forces them to become the recurring victims to these anti-social diseases.

Group II is represented by J., A. and others, who are modern soldiers and sailors. These people have to live away from their home and hearth, sometime for months or years together. They do not even see the faces of women, when either they are on the high sea or when actively engaged in war. Due to this strange type of life, these men are forced to live, where the value of life itself is lowered very much and it is not expected that they will be much afraid of contracting V. D. In actual practice also it is exactly the same, they keep a 'don't care' attitude, and at the same time they assure themselves that there are excellent modern remedies and preventives which may protect them. This care-free attitude makes them easy victims to venereal diseases. Though after infection they get proper treatment, early and easily, yet they remain free

of disease for a very short interval, because they never hesitate to undergo the same sort of black experiences again and again, whenever any opportunity comes their way.

Group III is represented by a so-called primitive boy. The boy is enlightened and educated, thanks to the activities of the missionaries. The boy confides that he feels the periodic, instinctive animal needs in him off and on. During these peiods of phasal carnal needs, he visits houses of ill fame or girls of lighter character. He takes the whole thing, in an unsophisticated easy manner, and in a quite natural way. He finds nothing shameful or unbecoming in it. He has got no social stigma, neither he has developed any sense of prestige of modern society and civilization. His education has made him only conscious of the need of adequate treatment, to save him, the posterity and his sex partners from the future danger of these diseases.

Group IV is represented by a special type of cases who are young men and due to socio-economic condition are deprived of the facilities for the normal expression of their already matured sex lives. With advancing youth, curiosity grows and such a young man soon falls a victim to sex allurements. When he realises the full significance of it, it is too late. He becomes very much remorseful and depressed. Marital happiness, blessing of children, and all other future family happiness and comfort appear lost to him. It is very difficult to reclaim these young men back to their normal mode of life.

Group V is represented by one who is usually a young man and who wrongly believed that he had lost his potency, due to his early years of self abuse. As there was no other convincing method open to him, he was forced to visit houses of ill fame. He proved his potency but contracted the disease.

Group VI is represented by one who is a highly intelligent and highly educated university man, typical of his group. He also assumes a 'don't care' attitude like the soldiers. He is not shy, and takes the treatment immediateely, knowing that modern treatments are both efficient, easy and without any risk. He is also quite adept in the modern preventive practices. He is a free thinker and too rationalistic to believe in moral scruple or in old conventicnal morality. He is a worshipper of science and belittles the sentiments. He lives successfully a double life, a family man and at the same time a protagonist of free love.

Group VII is represented by those happy-go-lucky young boys, who to make their holidays successful go to the whole length of losing themselves in drinking, and drowning all their social sense and balance, and to make it worse, they do not hesitate to share beds with the so called 'pick-up' girls. As a consequence, they develop the disease. It comes like a bolt from the blue to them, and they become very much afraid and repentant. They shun society, feel guilty and think in their sober moments that the disease is a right punishment for their antisocial conduct. They make fervent promise, that in future, they will never see any other girl. Unfortunately for these boys, they form a very bad notion for the girls in general, and many of them henceforth become afraid of all girls, and very often force on themselves life-long celibacy. This bachelor's life is both a punishment and an expression of the uncompromising attitude that they take in respect of all girls for the faults and failings of a few.

Group VIII is represented by one almost similar to the group above. The gentleman was a revolutionary in his younger days, but due to some circumstantial influence and weakness of his rising youth, he fell a victim to temptations. As a remorseful consequence of it in later years, he shunned society altogether and embraced the life of a sannyasin, renouncing all objects of pleasure, including woman. He never allowed himself even to come in contact with the shadow of a girl.

Group IX is represented by a medical student who is typical of those persons who attempt to make us believe that they are simply the innocent victims of some sly allurement put in their path by cunning persons.

Group X is represented by a girl who while a victim to the ugly plan of some unscrupulous friend, contracted the disease. Though she developed the disease due to her own foolhardiness, ignorance and impulsive action yet she thinks that she has been deceived and as an attitude of revenge takes to the profession of a so-called nurse in a massage clinic. (Many of her type also take the life of society girl or of light-o-love girls). She does not take any measure to save others from infection, on the contrary, likes to see the maximum number of men fall before her revengeful onslaught. She likes to see all of them moving in the same boat, along with her.

Group XI is represented by the case history of Mr. N. S., who reveals quite the opposite type. This gentleman was infected with V. D. by intimate relations with one of his personal friend's sister. Both are very highly placed in the society and honoured by every body. After the infection the gentleman shunned all company, took the self imposed task of making the lay public educated and conscious about this social evil.

Group XII is represented by Mr. B. B., who was a typical weak minded but impulsive young man. He was easily carried away by the vile persuasion and evil temptations of his friends. He fell an easy victim to the disease, but was properly treated. After some time the gentleman became morose and remorseful. He masochistically thought that any punishment was good enough for him. He withdrew from the society and began to lead an isolated life of depression and

despondency. Though he was a fool for a single night he carried the pangs of it, all through his life.

Group XIII is represented by a medical student, who unfortunately contracted the disease and went to the whole length of killing himself to save himself from the worries and anxieties, about all the undesirable possibilities of dangerous diseases. The guilty feeling, the anxieties, and depression were too much for him.

Group XIV is represented by Mr. S., a sportsman. He was an inveterate sinner. He got repeated attacks of gonorrhoea, syphilis, and soft sore. Though during each illness, he showed extreme remorse and repentance yet he forgot all about it when he was all right, and any fresh opportunity came in his way. Like a compulsive neurotic patient, he could not save himself from the temptations of irregular sex life. In spite of all the fervent appeals from his friends and well wishers, inspite of his own ardent desire and promises, he could not save himself from his own insatiable lust and inflammable passion.

Group XV is represented by Mr. G., who married his friend's sister partly as an act of compassion for their economic distress and partly attracted by the youthful blooming figure of the girl, but at the present time, he was regularly taking in outside girls. He contracted the disease and tried to justify his conduct by throwing the blame on the supposed frigidity of his wife whom he considered inadequate for his own highly developed sex cravings.

Group XVI is represented by Mr. R., who was frankly immoral, but developed a guilty conscience and a chronic suspicion, to any skin or other manifestations that might come out at any time. He was hypersensitive to any kind of ailment of body and mind. Any particular disease in his children, only made him conscious of his past failings. It is very difficult to allay the suspicion of this type of case. Thorough treatment, repeated blood and other tests, sincere assurances by specialists in the line, nothing can convince these men. The guilty mind refuses to be soothed easily.

Group XVII is represented by Miss T. and Master G. During the evil days of the last war, they were tempted to the darker sides of life. Afterwards, though they were repentant and liked to come back, yet they found themselves totally forsaken by friends and near relations. Then the only course left to them, as they could not develop healthier friendship and socially approved relations, was to go further down in the scale of social ladder. They are the unfortunate persons possibly lost for good. Society appears to be rather too cruel to these persons.

Group XVIII is represented by Mr. M., who was much pained at the behaviour and neglect of his wife. In love one likes to find himself respected and placed in high admiration and when that is absent or denied the self-elating instinct is shattered, and ego syntonic feelings are completely drained. As such Mr. M. valued himself very low, and as an apparent proof of it, he allowed himself to sink to a very low level of social quagmire.

Group XIX is represented by Mr. D., who is very melancholy. Both he and his wife are highly educated and enlightened persons. But unfortunately the personality make-up of the two was incompatible, and estrangement took place between the husband and the wife The wife to belittle the husband began to carry on a life of easy virtue. As a retaliation to this the husband also took to light-o-love girls. In this peculiar conduct this young couple had no remorse or repentance.

Group XX is represented by Mr. C., who is an educated and elderly person and is supposed to have contracted the disease extragenitally by accident, follows the medical direction of isolating himself from the children and others scrupulously, yet this is always done by him with a protest. With all the force that he can command, he asks in despair, from the very depth of his soul, why he should be forced to live the life of a 'social leper', when he himself is in no way responsible for the disease.

PRACTITIONERS' CORNER

EPILEPSY

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During the last ten years great progress has been made in our knowledge and treatment of epilepsy. It is well-known now that the clonic convulsions originate in the cerebral cortex and tonic convulsions in the brain stem. Cerebellar fits are characterised by regular rapid running movement of extremities associated with rapid and violent rolling over of the body (Johnson, *et al*, 1952) This repeats itself till it ends in development of generalised tetanus. Much of this type of localization has been due to the introduction of E.E.G. in the study of this disease. It has been established beyond any doubt that there is no epileptic convulsion without corresponding change in the brain wave pattern. Hysterical fits are never found to be associated with any abnormalities of electrical discharges from the brain. It has been corroborated further that the dead neurone is not the source of epileptic fit. It is the dying one really which manifests its malfunction by seizures of abnormal brain waves.

AETIOLOGY

There are at least 5 main aetiological factors which give rise to this disease:

(1) Congenital defects: This may mean either that there is maldevelopment or underdevelopment of the brain tissue or anomalies of the vessels supplying the brain.

These defects may either be so much gross as to give rise to idiocy or be very minor as to produce only fits. It is the latter group which is so prone in childhood to have what are called pyrexial fits. Their neurones whilst changing from anaerobic metabolism (Himwitch, 1951) found in foetal brain to aerobic metabolism of the adult tissue are easily vulnerable to upset of function during stress of high fever.

(2) Trauma: This is a frequent source of epileptic fits in both infancy as well as older age group. The birth trauma is a well recognised cause for convulsive disease. It may be severe or so very mild as to escape detection. In the latter case even moulding of the head may produce coning (Penfield, 1952) at the tentorial hiatus for long enough time to produce vascular damage to any region of the brain. Some percentage of these cases end up with extensive degenerative disease of one or both hemispheres giving rise to motor deficits and fits. In adults head injuries including bullet injuries, damaging the brain tissue or meninges or vessels giving rise to various types of subdural, subarachnoid or intracerebral haemorrhages are well recognised factors to give rise to epilepsy.

(3) Inflammatory lesions: They are either due to virus or bacterial infection. Either of these are usually extensive, affecting a large part of brain alone or brain and meninges as well. Virus encephalitis, meningococcal infections, tubercular meningitis and meningitis due to middle ear disease are some of the most usual entities seen to produce epileptic fits.

(4) Degenerative lesions: They may either be vascular as in old age giving rise to such presenile dementias as Alzeimer's and Pick's disease or may be due to demyelinating process such as Schilder's disease which may be focal, or progressive and generalised.

(5) Tumours of the brain: They may at one stage or another of their growth, especially in cerebral tissue, produce symptomatology of fits. Epilepsy first appearing in adult life is always suspected to be due to a tumour unless it is proved otherwise by thorough investigation.

Clinical Types

During one year of study of 150 cases of epilepsy in the Christian Medical College Hospital, Vellore, the following types of epileptic fits were met with:—

(1) Grand mal attacks: These are usually preceded by an aura which quite often is helpful in locating the primary seat of disturbance. Sensory auras of cerebral modalities or motor or visceral auras of one part or other of the body have a great localizing significance. The attack may just end with the aura or it may pass on to the full-fledged fit of unconsciousness associated with tonic-clonic movements with involuntary urination or defaecation, biting the tongue and frothing from mouth. Sometimes a loud cry accompanies the beginning of the fit. The postictal period may last for sometime and during this period the patient may show some violence. If the attack remains limited to aura alone, especially if it is transitory and motor, it is likely to be mistaken for petit mal. The electroencephalographic study clinches the diagnosis. It shows dysrhythmia between attacks and generalised spike discharges during the attack.

(2) Petit mal attacks: They may just be a loss of consciousness of very short duration so that the patient is not at all aware of them or be akinetic in which the patient, usually a child, falls suddenly, is momentarily unconscious and then gets up or are myoclonic in which there is a short lasting muscular twitching in a limited region of the body with a slight disturbance of consciousness. The E.E.G. shows a typical bilaterally symmetrical spike and slow wave pattern with an average frequency of about 3 per second. This type of discharge is present both during the seizure and interseizure period.

(3) Petit mal variant attacks: These attacks differ from the typical petit mal in that they are usually more extensive in motor involvement but are not so extensive as the grand mal attack, the total duration of the fit also is longer and the movements are bizarre. E.E.G. pattern shows frequency of 1½ to 2 per second of spike and slow wave discharge. The slow wave is usually more broad at the base. Some of these discharges have a grand mal component in which the spike preceding the slow wave is more than one and these cases clinically are more like grand mal fits.

(4) Jacksonian fits: These attacks are characterised by convulsions or sensory irritation in a limited region of the body without disturbance of consciousness. The type of electrical discharges from the focus of disturbance depends on the size of the lesion. It may only be spikes if the damaged region is small or it may be petit mal variant type of discharge if the area involved is comparatively large.

(5) Psychomotor attacks: In this type of epilepsy movements are more or less purposeful though usually poorly co-ordinated. The patients are never conscious of what they do during the fit. Personality disorders are a frequent accompaniment. Psychomotor fits are commoner in middle aged people than children. E.E.G. shows spikes of high voltage coming either from anterior lobe on one or both sides or from the frontal lobe.

(6) Diencephalic type of epilepsy: The episodes of this type are usually initiated by pain, somatic or visceral, more often the latter. During the fit the patient manifests lot of emotion, usually rage, but less often fear and does movements consonant with the corresponding emotion. The whole attack is in the state which the patient is not conscious of. Many cases of

homicide or suicide have been reported in this category of fit. The E.E.G. in the interseizure period very often shows bursts of 6 or 14 or both positive spikes, most marked in parietal and occipital zones both sides. These positive spikes have been described to have the focus of negative component in the hypothalamus which is the seat of the disease.

(7) Mixed type of epilepsy: In this group of epileptics are included cases who often have had the disease for many years. They have more than one type of fits above described and are very often mentally very much damaged. Electrical activity of the brain shows a mixture of more than one pattern of discharge. These cases are difficult to treat.

(8) Status epilepticus: This disease entity is confined to epileptics who, due to some intercurrent disease or derangement, go into a state when the frequency of fits gets very high and they get convulsions almost incessantly, or are seen in post-ictal state of unconsciousness. Epileptics who sometimes stop medication suddenly are likely to go into this state. Some of these cases turn out to be that of diabetic or uraemic coma or advanced cases of increased intracranial tension due to diffuse expanding lesion, e.g., one or multiple tumours or cysticercosis, etc. Hypertensive encephalopathy may occasionally give a picture of this sort. Tetany and tetanus, however, can be easily distinguished from it, if kept in mind for differential diagnosis. E.E.G. in status epilepticus shows either abnormal seizure discharges or just slow waves of post-ictal pattern.

The aetiological diagnosis of epilepsy needs more elaborate examination. In addition to a detailed history of the illness and thorough systemic examination, further aid has to be sought from pneumoencephalography, angiography and ventriculography. The blood studies for urea, calcium and sugar and the urine studies for albumin, sugar and ketone bodies must make a necessary routine investigation in every case. Every case, expanding lesions excluded, has to have a lumbar puncture and study of C.S.F. for cytology, bacteriology and biochemistry.

Treatment

The treatment of epilepsy as we do in the wards in the Christian Medical College Hospital, can be dealt with under three headings:—(1) General treatment; (2) Drug therapy; and (3) Radical measures.

I General Treatment: It consists of improving the nutritional state of the patient. Many of the epileptics who get the fits frequently often are underfed, due to lack of appetite and failure of proper looking after. These cases need to be put on high vitamin and high protein diet. Amongst the vitamins, vitamin B-complex is the most important as it is particularly useful for the neurone metabolism. Proteins are not only useful as body builders in general, but are particularly useful for the nervous tissue as it is well known now that the neurone when it is fatigued shows the first effect of this state by its inability to utilise aminoacids. Partially damaged nerve cell regains its normal electrical activity and metabolism if it is liberally supplied with proteins. Eggs, fish, dairy products and nuts are useful additions to the usual food when extra proteins have to be supplied.

It is advocated that the fluid intake of epileptics be cut down to minimum for hydration is detrimental as it brings about abnormal changes in electrical potentials from brain tissue. This fact is made use of for a diagnostic procedure to induce epileptic fits by giving pituressin and excess of water to a patient who is suspected to suffer from the disease. This procedure very often precipitates the attack in an epileptic patient. It is usually enough to tell the patient to cut down his fluid intake preferably to one-third, but to one half definitely.

The limitation of chlorides was recommended when bromides were used as the only drug to control the epileptic fits. Ever since the use of this drug has been given up chloride reduction too is not given as an advice to the patient. In cases, however, where bromides are given, this restriction has also to be imposed.

There is lot of controversy regarding ketogenic diet. It consists of giving fats about four times as much as total weight in grams of proteins and carbohydrates combined. It often induces passing of ketone bodies in the urine and changes the pH of both the urine as well as blood to the acid side. The underlying principle is that anything which makes the blood more alkaline is likely to induce fits. The difficulty about giving this diet is not only the expense as the fats are more expensive food ingredients but also that such high fat content of the food has a detrimental effect on the appetite of the individual. However, in cases where the diet can be managed it has a beneficial effect, especially in cases suffering from petit mal.

For habits of sleep and work, the patient must know that fatigue and starvation are both derogatory for him. Either of them induces hypoglycaemia which reduces the convulsion threshold and the epileptic attack sets in. The patient should be informed about the fact that he should not take bath in a river, tank or canal for fear of drowning, if coincidentally he gets an attack, also he should not indulge in cycling or walking on precipices, etc. for the same reason. His work has to be chosen according to this requirement.

II. Drug Therapy: (i) Anticonvulsants, (ii) Adjuvants.

(1) *Anticonvulsants*—The best anticonvulsants known at the moment are barbiturates, hydantoins, diones and phenacetylurea, although more and more of these drugs are being added every day to this group. There are some features common to anticonvulsant therapy which shall be stated here—

(a) That an anticonvulsant be started at the therapeutic dose and carried to the optimum if fits are not

under control. The second anticonvulsant is added again from the therapeutic to the optimum dose and so the third till fits have ceased.

(b) Reducing the dose of anticonvulsants should be gradual. If it is a sudden stoppage the patient is likely to go into status epilepticus.

(c) If a given anticonvulsant fails at a certain stage, it does not mean that it will fail always. We shall have to try it again subsequently.

(d) An anticonvulsant or a combination of anticonvulsants which controls the fits must be continued to be taken regularly and for a long period at least for two years after the patient has stopped getting fits and E.E.G. is normal. Then the reduction in dose is made gradually.

(e) Whenever an intercurrent illness supervenes the dose of anticonvulsant must be increased. In women, it should be increased just before menses and kept high during the course of menses.

Barbiturates are useful for all types of epilepsy although they have minimum utility in petit mal. They are extremely useful in grand mal and psychomotor attacks. The general rules as already stated regarding regulating the dose keeping or diminishing it combining with other anticonvulsants apply as much to this group as to other groups of anticonvulsants. Phenobarbitone is begun at 1 grain once a day if the fits are infrequent or 1½ grains every 6 hours if fits are very frequent. The dose of course, is varied according to age in children. Barbiturate idiosyncrasies are rare but when toxic manifestations appear, it is in the form of rashes and the drug has to be reduced. Sometimes the patients react by being drowsy. This usually passes away in due course, but sometimes the dose has to be cut down. Intravenous barbiturates are very useful for status epilepticus and have to be given in grain 3 to 5 dose. Pharmacologically, barbiturates have been demonstrated to act upon the dehydrogenase in the neurone cytoplasm thereby setting its function to a normal level.

The usual barbiturate in use is luminal, but it is advocated that geminol gives better results (Peterman, 1952) as its sedative effect is much less as compared to its anticonvulsant effect.

The treatment of major seizures is always started with the phenobarbitone. If, however, the convulsions do not respond to an adequate dose of this drug, then hydantoins are added gradually. The most popular hydantoin is dilantin sodium but in the hands of various workers nuvarone, thiantoin or mesantoin have given better results.

Whenever, however, these drugs are made use of, we have to be careful about a few features—

(1) Some of them have an effect on the bone marrow, therefore, a fortnightly check-up of total count, differential count and haemoglobin must be made for about three months.

(2) The liver function should always be kept in mind and hence urine should be tested to look for bile pigments.

(3) The cleaning of teeth and massaging of gums are necessary to avoid damage to them. High doses of vitamin C are to be given in addition. It may, however, be pointed out that hydantoins very often make the petit mal worse. Therefore, if in E.E.G. there is some indication of petit mal discharges being present then this group of drugs have to be given in combination with diones.

The treatment of petit mal should be started with tridione or its less toxic substitute, paradione. If this group is unsuccessful, phenacetylurea or phenurone be added. Since some of these cases have also grand mal pattern associated, it is better to give phenobarbitone as well. A new drug 2-sulphanamide (Peterman, 1952) is found to increase excretion of acetone and hence has great utility in the treatment of petit mal. As petit mal has been surmised to be due to some derangement in the deep midline region of the brain, thalamotomy has been attempted by some of the neurosurgeons for surgical cure. The results have been uniformally unsatisfactory so far.

The treatment of petit mal variant is more unsatisfactory and in addition to giving various combinations of anticonvulsants adjuvant therapy has to be given. If there is any doubt of encephalitis then aureomycin or terramycin and penicillin combination may be given for relief in some cases. Very often each course has to last for 3 to 6 weeks, and may have to be repeated subsequently.

Diencephalic type of epilepsy very often yields to hydantoins alone or sometimes benzedrine has to be added also.

For psychomotor epilepsy the drug of choice is phenurone. But it is always advantageous to combine it with phenobarbitone. Phenurone, however, has two ill effects: first, that it sometimes damages the liver and hence we have to be careful about it and secondly, it sometimes precipitates psychotic symptoms. In the latter case, the drugs has to be stopped for sometime.

For status epilepticus, the treatment has to be that of an emergency. The usual thing is to give paraldehyde 4 c.c. stat intramuscularly and if needed luminal gr. 3 intravenously. Subsequently dosage depends upon the state of the patient. The drugs may have to be repeated every 4, 6 or 8 hours. The patient should be tube fed if he cannot take nutrition otherwise. The bowels and the bladder should be attended to. As early as possible the oral drug therapy should be resorted to. As a last resort, lumbar puncture and inhalation anaesthesia with ether should be made use of and these measures may succeed to overcome the malady as a further help to rest of the treatment. For diagnosis these cases must be distinguished from uraemia and diabetic coma by proper and adequate studies.

(ii) *Adjuvant therapy*—It has been demonstrated by the study of capillary pattern in brain biopsies and aminoacid studies of epileptogenic foci that epileptic brain usually shows paucity of capillaries in number and also change in pattern such as to produce deficient oxygen and nutritional supply to the area affected. Also the pathological area shows deficiency in certain aminoacids. Which of these two deficiencies, i.e., capillary blood or aminoacids is primary it is not possible to say, but usually when the disease is established both defects are present. The treatment, therefore, consists in increasing the vascular supply as well as providing the necessary proteins. The best combination is to give histamine (Moore, *et al*, 1951) about 2 mg. with about 200 mg. nicotinic acid in 300 c.c. saline by I.V. drip given on alternate days and blood transfusions or plasma transfusion. The number of these infusions depend on the improvement studied with E.E.G. or improvement in C.S.F. protein findings if they are abnormal to start with. This treatment may have to be repeated subsequently depending on the course of the disease. Histamine studies have been elaborated recently. It has been found that histamine is a normal constituent of the neural tissue being maximum in the sympathetic ganglia. Secondly, that histamine has a definite effect on the cell permeability.

The fact that in epilepsy there is sometimes found alteration in the permeability of the neural tissue involved has led to experimental studies in cats which are given cholesterol (Aird and Gurchot, 1939a) intravenously. It has been found that cats which are put on cholesterol are not so readily amenable to convulsants like procaine as those who have not been given any cholesterol.

Same is true of the dyes. Brilliant violet red (Aird, 1939b) given to dogs reduces the capillary permeability due to concussion in these animals.

This type of dye and cholesterol therapy yet awaits trial in human beings.

Last of all, desoxycorticosterone (Woodbury, 1952) and A.C.T.H. are a recent addition to therapy in epilepsy. Whilst the first drug affects the neurone by changing its electrolyte content particularly the potassium ion, the second one seems to exert influence on the neurone metabolism as a whole. These drugs when they are given are only adjuvants to the anticonvulsants. It may be pointed out that some of the cases with frequent severe and prolonged fits develop calcium deficiency. This is detectable if blood is examined for this ingredient. These cases are very much benefited if I.V. calcium is given in addition to anticonvulsants.

If diabetic or uraemic factors are found in addition to epilepsy, these diseases must be treated by adequate treatment. If hypoglycaemia has been found out the patient should get regular feeds containing comparatively larger ration of proteins and carbohydrates. It has been found out that proteins sustain the blood sugar at normal level for a much longer period than carbohydrates.

III. RADICAL CURE OR SURGICAL TREATMENT: This is finding more and more scope with the advent of E.E.G. studies. It is possible to produce epilepsy in monkeys by applying alumina cream, a sclerosing substance, to the brain and study the E.E.G. changes brought about by the drug. The area of abnormal activity can be well demarcated with the brain wave studies. This area when ablated gives at least 5 years cure to the animal and if left as it is, the abnormality of disease not only spreads by proximity but also is transmitted to homologous areas of the opposite hemisphere. If ablation of the primary area is done at this stage, the results are not at all so satisfactory. In human beings by E.E.G. studies it is possible to survey the brain and localise the area from which the abnormal discharges are coming. Further help for localisation is got by electrocorticography. This is taking the brain waves directly from the brain when due to previous localisation from surface electrodes and by pneumoencephalography the surgeon has exposed the suspected region of the brain. This procedure defines exactly as to how much of the tissue has to be removed. The modern surgical removal by subpial resection and adequate ablation does not leave any scar or epileptogenic brain tissue to start fits again after operation. These cases are usually those which have a primary focal degenerative lesion or a focalised defect due to injury or partially healed encephalitis.

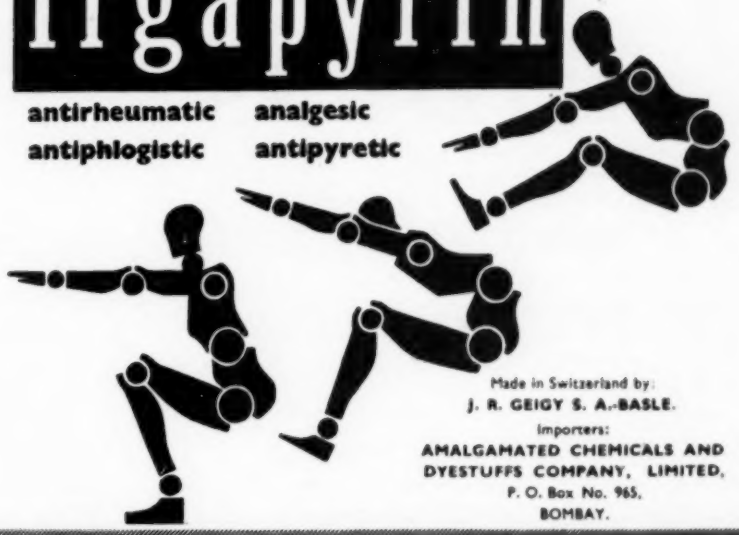
It is further advocated that if multiple foci of abnormal discharges are present, removal of the bad ones may help to check the disease. It is a possibility but the results are not expected to be so brilliant as in the first group. Postoperatively, in either case, anticonvulsant and other adjuvant therapy have to be continued for sometime to prevent recurrence.

Even though during the last decade a lot of ground has been covered to understand epilepsy and its treatment, there is yet lot more to be learnt to control and treat the disease successfully. It needs strenuous effort by research to make any headway. The most important aspect of the disease is that it is a social problem and any progressive society has to make provision for the looking-after of the vast population of its epileptics. The general medical practitioner owes a heavy responsibility and he is to realise how colossal the task is. He has to make his clientele conscious of the ravage of the disease and pool their resources financially to help investigation both experimentally and clinically. Most of the countries have already started epilepsy leagues whose chief function is to aid research in this disease and to look after and provide employment to the persons suffering from the malady. By all the means available by general, drug and operative therapy, nearly 85 per cent of the epileptics in U.S.A. are able to earn their living and live independent and useful existence.*

*This paper was presented by Dr. Baldev Singh at the Vth Annual Conference of the Salem District Medical Association, Salem, March 1953.

Irgapyrin

antirheumatic analgesic
antiphlogistic antipyretic



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SPECIAL ARTICLES

ON THE NEED OF MEDICOLEGAL INSTITUTES AT STATE LEVEL

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The practical application of the science of forensic medicine or medical jurisprudence, is the foundation on which justice in many criminal cases is administered.

Bearing in mind how criminal law embraces a wide range of social relations and individual liberty, it is easy to see the absolute need of basing its administration on unimpeachable scientific grounds.

In this task, the medical jurist is called upon to lay bare the unvarnished facts—very often they are the only facts available in the case, and on which may depend the honour, liberty and life of an individual.

Is this branch of the profession, as at present practised in our country, sufficiently equipped to shoulder this important responsibility, on the correct discharge of which rests the whole sanctity of criminal and civil law and its existence?

How Do We Function Now?

The detection of crime and the apprehension of the criminal depend largely on catching a culprit during the act or relying on informers or upon the testimony of witnesses. The application of scientific methods—forensic science—consisting of medicolegal investigations and scientific criminalistics, are rarely used by our police due to want of training and experience in such work. In lieu of scientific methods, they still depend on the mediaeval methods of torture—in modern parlance called the third degree.

The medicolegal investigations in most places are carried out by untrained medical officers of the State. They receive no practical training in forensic medicine and are not qualified to undertake this work in the strict sense. The facilities by way of providing mortuaries and laboratories are lacking or are poor and inadequate. The day-to-day needs of the courts in our country may be met with but the standard of work carried out by the doctors approaches nowhere that of advanced countries.

Dr. Sreenivasulu Naidu, former professor of medical jurisprudence, University of Madras, is of the opinion that "it is a cruelty, sin, crime, and what not, to expect an untrained or ill-trained medical man, whatever his qualifications otherwise be, to do medicolegal work in all its complexity, and to punish him in his failure. I would over and over urge and emphasize that forensic medicine is as much a speciality as any specialised branch in medicine or surgery is and medicolegal work cannot be lightly thrown on the shoulders of any and every medical man" (Naidu, 1948).

In a few cases, inadequate medicolegal examinations conducted by the medical officers have led to erroneous interpretations of the findings. In extreme cases this may mean many homicidal deaths escaping detection, or deaths from purely natural causes being misinterpreted and attributed to homicidal violence, with subsequent prosecution and conviction of an innocent accused person for a non-existent crime, thus resulting in flagrant miscarriage of justice. A few case histories are recorded to illustrate the above from the writer's medicolegal practice:

Case 1—A male expired soon after an intravenous injection of N.A.B. administered by an Ayurvedic practitioner. Death due to asphyxia as a result of air embolism induced by the inadvertent administration of N.A.B. was recorded by the medical officer who conducted the autopsy. The Ayurvedic doctor was charged under section 304-A, I. P. C. for causing death through negligence, and was convicted and sentenced to six months rigorous imprisonment. He preferred an appeal to the Sessions court, when the writer in the capacity of an expert witness observed, that as no post-mortem signs of air embolism were recorded by the medical officer who conducted the autopsy and even conceding that a small quantity of air did enter the circulation, it was unlikely to have caused death. Death was probably due to colloidoclastic shock. The learned judge acquitted the appellant. (C.A. No. 12 of 1948, in the Court of District and Sessions Judge, East Godavari).

Case 2—A girl aged 13 years was alleged to have been raped by a man aged forty years on 8-8-46. A male doctor who examined her the following night deposed that he found no signs of rape and that the hymen was congenitally absent in her. A lady doctor in-charge of a Gosha hospital who examined her on 12-8-46 deposed that the hymen and perineum were torn and bleeding, and that scratches of human nail marks were also present. As the opinions of the two doctors were conflicting the writer was summoned to court to give his expert opinion. At his suggestions, the victim was referred to the professor of obstetrics and gynaecology for further examination on 5-2-47, when he was also present. An old tear of the hymen alone was seen and there was no scar in the perineum. It was not possible to say whether the old hymenal tear was due to rape or not, as she was leading a married life subsequent to the incident. The learned Ses-

sions Judge observed with reference to the evidence given by the lady doctor. "She is not an ordinary woman. She is in-charge of a Women's Hospital and it is a matter for consideration whether in matters so intimate to women and to her own profession, she is likely to have made mistakes with regard to a tear of the hymen being a tear of the perineum. . . . ." Even though there was sufficient proof against the accused, considering the "many defects in the medical evidence" benefit of the doubt was given to the accused and he was acquitted. (S. C. No. 1947 in the court of District and Sessions Judge, Visakapatnam).

Case 3—A demobbed soldier aged 45, during a drunken brawl on 3-6-48, was said to have received a punch on the chest with the fist and fell down. He died instantaneously. At autopsy no external injuries were found on the chest or the head. There were no internal injuries either. Diffuse subarachnoid haemorrhage with blood clots in the ventricles were observed. There were no internal injuries either. Diffuse subarachnoid changes. Urine alcohol estimation confirmed that the deceased was intoxicated with alcohol at the time of death. Death was due to subarachnoid haemorrhage. The accused was charged with culpable homicide not amounting to murder and was remanded to jail pending his trial. The accused was committed to sessions by the lower court. At the sessions court the writer being convinced that the subarachnoid haemorrhage was spontaneous in view of the marked atheromatous changes of the vessels, expressed that the haemorrhage was the result of raised blood pressure secondary to alcoholic intoxication and the person's temper during the quarrel resulting in spontaneous rupture of vessel of the brain, and that the injury inflicted was a fortuitous coincidence. The learned judge relying on the writer's deposition acquitted the accused. (C. S No. 37 of 48 in the court of Additional Sessions Judge, Visakapatnam).

As regards scientific criminalistics, the laboratory examination of physical evidence is hardly used in our country. Scientific methods like recording of finger prints, the analysis of blood stains, grouping of blood, technical photograph including radiography, use of lie-detectors, the study of hand writing, ballistics and the use of other refined instruments in the examination of minute pieces of evidence, etc., are hardly employed in our country. However, in a few States there are chemical examiners who deal mostly with the detection of poisons, blood and other matters by chemical examination.

These are sufficient to illustrate the magnitude of our responsibilities. That justice is obtained even with these defects redounds to the credit of the judiciary, but hardly justifies the precarious pseudoscientific foundations on which it is based.

Certain Misconceptions Regarding Forensic Medicine—Contrasted with its Status in Europe and other Places

The fallacious idea that any medical practitioner or even a pathologist without any medicolegal training is qualified to undertake medicolegal autopsies, etc., needs correction in the first instance.

The pathologist or medical practitioner may interest himself only in determining a mortal lesion as the direct cause of death, but a forensic pathologist has to solve many other important questions. The latter has to operate not only with actual findings in the case, but with an adjudication of further possibilities has to reconstruct the case, based on facts and findings. An almost mathematical precision is demanded of forensic pathologist to determine facts which are of no interest to a pathologist or a medical practitioner. This explains the surprising nature of conclusions drawn from special investigations made by the forensic pathologists. The works of Sir Bernard Spilsbury, Glaister, Nooris, Moritz, Helpern, Duttra and others bear ample testimony to my contention. It is evident that to be able to discover those particulars that escape the notice of a pathologist or a medical practitioner, the forensic pathologist must be specially trained. To quote Helpern (1946), "the person entrusted with this examination should be a pathologist, trained in that branch of legal medicine called *forensic pathology* and working in the official capacity of a medical examiner or Coroner's physician. There should be adequate facilities at his disposal for the performance of an autopsy and for any other investigation along histological, chemical, bacteriological and serological lines which are indicated by the nature of the case."

The Health Survey and Development Committee in India has correctly criticized the existing system. "The present position in regard to the investigation of medico-legal problems is very unsatisfactory. Every medical practitioner in charge of a remote dispensary whatever his qualification or experience, is asked to undertake medicolegal postmortems in complicated cases of crime and he is liable to be held in question thereafter, the presumption being that every medical man is competent to undertake these responsibilities, but unfortunately neither the profession, nor the Judiciary or the State have stopped to consider the absurdity of such a presumption." Report of the Health Survey and Development Committee in India (1946).

And yet, the qualifications laid down for professors of forensic medicine by a few universities and by the Health Survey and Development Committee are "a good experience in the department of pathology (five years) with a higher qualification in that subject." These qualifications are not enough for a professor; experience in pathology is different from knowledge of forensic pathology. Unfortunately, in most universities, even these qualifications are not insisted upon, for 'seasoned commonsense' of a civil surgeon is sometimes deemed adequate for holding a professorial chair.

In European countries like Denmark, Roumania, etc., state medical officers, even as early as 1914, had to undergo a course of one year in legal medicine in a medicolegal institute and obtain a diploma before they were entertained into service. According to Prof. Minovici (1928), "in this way the creation of a select body will be attached to which justice will have to

address itself exclusively for the opinions in legal medicine."

As regards the professors, the qualifications required are, a doctorate in legal medicine, and considerable experience in the field of legal medicine. Even the assistants to professors are persons of high academic attainments, who are required to pass numerous examinations and serve many years before qualifying even for minor positions (Nooris, 1928).

When such are the rigid qualifications laid down in other countries for Government medical officers and to professors of forensic medicine and their assistants, should we be satisfied with untrained and unqualified medical officers for conducting medicolegal autopsies, and officers with "good experience in the department of pathology" or a superannuated civil surgeon, with no qualification for teaching this subject?

It is rather unfortunate, that forensic medicine has not received its true recognition in our country. The necessary improvement in medicolegal practice in our country must, in the first place, rest on those in authority, who must appreciate that it requires special training and that not every medical officer can deal with medicolegal cases. It would help a great deal if the practice of other countries were adopted, that Government medical officers must have had an additional training in the state medicolegal institutes, before they are entrusted with positions of public trust. The qualifications laid down by the universities and the Bhore Committee for professors of forensic medicine should be changed to a doctorate in forensic medicine or a doctorate in pathology with a diploma or special training in a medicolegal institute. Unfortunately at the time of the report of the Committee, post-graduate qualifications in forensic medicine were not possible or available in India.

The Necessity for Medicolegal Institutes

Medicolegal institutes have been in existence for centuries in European countries. The first medicolegal institute was started in Austria in 1804. There are medicolegal institutes in Rome, Paris, Geneva, Austria, Egypt, South America and other countries.

The importance of setting up of medicolegal institutes in every state of a country, closely associated with medical colleges, for the investigation of medicolegal problems peculiar to each state, and for the systematic teaching of forensic medicine to medical students, police officers, Government medical officers and law students has been stressed by all the leading medical jurists of the world (Smith, 1928; Regan, 1950; Gradwohl, 1950; Morland, 1950 and Dubowski, 1952). Naidu (*loc. cit.*) with his wide medicolegal experience in India has also suggested the starting of medicolegal institutes in every state of our country, "to check the work of the province, and co-ordinate such work, to evolve standards, and in general to be a source of consultation and guidance in forensic medical matters".

In this connection the opinion of Dr. Harvey Littlejohn, former professor of forensic medicine, University of Edinburgh, is well worth quoting at length. Writing in the preface to Smith's Forensic Medicine, he says—"A properly constituted medicolegal institute is a necessity for the efficient administration of the criminal law. Such a centre . . . . . not only ensures a full and exhaustive inquiry into any case, but affords the only satisfactory means of training a body of medical men to carry on efficiently the medicolegal work of the country. Institutes of this kind are to be found in connection with the Universities in Germany, Austria and other European countries, while the faculty of legal medicine in Paris is well known as a centre of research and post-graduate study. The provision of medicolegal institute under the auspices of the Home Office, with a staff of skilled pathologists to undertake the postmortem examination required by the Coroner and with all the necessary experts for further investigation, working under one roof, would not only be a valuable aid in the administration of the criminal law. . . . . ." To this able and forceful view based on wide practical experience, little could be added. The solution to this problem lies in the creation of special centralised medicolegal institutes in every state of our country. Such an institute will serve:

(a) to be a centre for medicolegal work and expert advice in the state;

(b) for training medical students, medical officers, police officers and law students;

(c) for research with particular reference to conditions peculiar to each state and the tropics in general.

The medicolegal institutes should be equipped with up-to-date apparatus and staffed to cover investigations of the more general type. In addition, each State institute should be provided with a specialist feature, that is, the specialization of a particular branch of forensic science, so that, the more difficult problems occurring in a particular state could be referred to the appropriate institute when necessary. It is envisaged that the work at the institute would cover a very wide field of scientific investigations, such as the following:

(1) Determination of age in medicolegal cases; cases of sexual offences like rape, sodomy, etc., certification of lunatics; disputed identity, etc.

(2) Medicolegal pathological work of various kinds; autopsies; examination of skeletal remains.

(3) Comparison and identification by microscopy of hairs, fibres, tissues, etc.,

(4) Forensic chemistry and toxicology; chemical analysis, including spectrographic and microchemical analysis, etc.,

(5) Serological work; identification of blood and seminal stains, determination of blood groups, etc.,

(6) Photographic work including microphotography, ultra-violet and infra-red work, etc.,

(7) Examination of firearms and projectiles. Examination of clothing, documents, etc.

The above work will provide a wide range of scientific investigations, some of which will be of a routine character. Some of this work is done now in a few of the states by different departments, like the chemical examiner's office, department of forensic medicine and other departments of medical colleges, city police surgeon's office, photographic and other sections of the police departments, etc. All these departments must be clubbed together under a state medicolegal institute, as work done in all, is only of a medicolegal nature and there will be better co-ordination in the work.

It is of immense advantage, to have all the scientific investigations required in a particular case under the supervision of one person, the director of the institute; for the majority of the investigations he will have trained men under his control, whilst for others, he may enlist the services of specialists having experience from the university or governmental departments. In some complex cases, the investigations may involve several members of the team working more or less independently: the conclusions reached must be correlated, contradictions reconciled and there may be missing links which may require further investigations. The interpretation of the data and drawing of the final report often call for mature judgment, and it is in the final phase, that the ability of the director is frequently exercised to advantage.

The essential mission of the medicolegal institute should be to train expert doctors, because for lack of competent men the application of forensic medicine becomes illusory; so the existing and the future entrants to state medical services should be trained at the institute.

As the primary object of the medicolegal institute is to comply with the requirements of the police, it is of paramount importance that any such scheme must include courses of instruction to the police entrusted with criminal investigation. The course of instruction should be planned to train them to understand the possibilities of the application of forensic science to the investigation of crime. It is also desirable for the constables and head-constables to receive elementary instruction. They are very often the first to arrive on the spot in any criminal investigation and they should be taught to know what to do and what not to do.

These medicolegal institutes will also serve as centres for research. There are many problems pertaining to thanatology like fall of temperature, post-mortem lividity, onset and disappearance of rigor mortis, states of decomposition, entomology of the cadaver, etc., which will help in fixing the time of death and which have not hitherto received the desired attention.

The institute should also be a centre for expert advice, to check the medicolegal work and co-ordinate such work in the State and in general to be a source of consultation and guidance in all forensic medical matters. A course of lectures can also with advantage be arranged for the students of law, and a diploma course for those taking up criminal practice as is done in other countries.

Lastly, there must be perfect co-operation between the police and the institute. The investigations should be carried out solely from the scientific point of view, and the results and conclusions given, regardless of their effect on the case in question. In other words, any conclusions reached must be disclosed, no matter whether they may be of advantage to the prosecution or the defence. With this object in view, it is essential that the institute staff should be as free as possible from any element of police pressure or control. In the United Kingdom all laboratory appointments are held from the Home Office, while in Egypt, there is a complete State Service directly under the control of Ministry of Justice; similarly also, when these institutes are started they must be directly under the control of either the Home or Medical Department.

The starting of these medicolegal institutes in every state will not involve any large extra expenditure to the State Government. A satisfactory practical solution of this need is the employment of certain existing local scientific and technical facilities and personnel, and its possible augmentation in the future, if necessary.

It need not be emphasised how great a role these medicolegal institutes will play in strengthening the confidence of the people in the operation of the criminal and civil law and place it on a more scientific and impersonal foundation. It is only thus that we can avoid the unfortunate blunders known as 'Judicial Murders' resulting from the evidence of the inexperienced and untrained medical men of our country.

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PNEUMONIA: PRESENT STATUS OF DIAGNOSIS AND TREATMENT

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If we define pneumonia in the broadest and simplest terms as an acute inflammatory reaction within the parenchyma of the lung, we are at once struck with the important fact that we are dealing not with a single disease entity but with a group of diseases of widely varied aetiology. Since pneumonias that are due to widely diverse causes may give rise to very similar signs and symptoms, and even to identical, or morphologically indistinguishable anatomical changes in the lung, a classification of pneumonia based on aetiology would obviously be more desirable than one based on clinical manifestations or on clinical-anatomical correlation. Moreover, an aetiologic classification of the pneumonias has other important advantages: (1) for the practitioner it is equivalent to a therapeutic classification, inasmuch as the major curative efforts nowadays are directed primarily against the causative agent; (2) from the point of view of public health, such a classification offers the soundest basis for epidemiologic investigations of the sources and modes of spread of the disease, and thus lays the foundation for the most fruitful type of approach to prevention; and (3) it offers the most promising approach to further research in diagnosis and treatment.

An aetiologic classification of the pneumonias is presented in Table 1. Adequate aetiologic studies of large numbers of consecutive cases in different places, over long periods, and under diverse circumstances, are too few to permit accurate estimates of the actual or relative incidence of the various types of pneumonia mentioned in this table. This presentation will therefore be oriented from the point of view of the individual patient and only the practical aspects of the diagnosis and specific treatment of the various types of pneumonia listed in this table will be considered.

TABLE 1—AN AETIOLOGIC CLASSIFICATION OF THE PNEUMONIAS

I. Bacterial agents which may cause pneumonia

1. Pneumococci (various types)
2. Haemolytic streptococci (Group A)
3. Haemolytic staphyloccocus aureus
4. Klebsiella pneumoniae, types A, B and C
5. Haemophilus influenzae, type b or 'X'
6. Streptococcus Viridins
7. Other streptococci
8. Hemophilus pertussis
9. Pasteurella tularensis
10. Pastella pestis
11. Coli-Aerogenes organisms
12. Salmonella species (including *S. typh*)
13. Meningococci
14. Mycobacterium tuberculosis
15. Mixed infections
16. Others.

II. Fungal infections which may simulate pneumonia

1. Coccidioidomycosis (Valley Fever)
2. Moniliasis (Candida albicans)
3. Histoplasmosis
4. Actinomycosis
5. Blastomycosis
6. Cryptococcosis
7. Others.

III. Parasitic diseases which may exhibit acute pulmonary manifestations (tropical eosinophilia?)

1. Trichinosis
2. Malaria
3. Amoebiasis
4. Toxoplasmosis
5. Schistosomiasis
6. Paragonamiasis
7. Chlonorchiasis
8. Filariasis.

IV. Viral pneumonias, aetiology established

1. Influenza A, A', and B
2. Psittacosis (Ornithosis)
3. Lymphocytic choriomeningitis
4. Variola

V. Viral pneumonias, aetiology highly probable

1. Feline pneumonia
2. Lymphogranuloma venereum
3. Pandemic influenza
4. Measles
5. Varicella
6. Cytoplasmic inclusion pneumonias of the infant
7. Infectious mononucleosis
8. Primary atypical pneumonia

VI. Richettsial infections with acute pulmonary lesions

1. Q fever
2. Epidemic typhus (including Brill's Disease)
3. Rocky mountain spotted fever
4. Boutonneuse fever
5. South African tick fever
6. Others (?)

VII. Miscellaneous or special forms

1. Loeffler's eosinophilia (allergic pneumonia)
2. Rheumatic pneumonia
3. Lipoid pneumonia
4. Chemical pneumonia
5. Pulmonary hemosiderosis
6. Other foreign bodies (acute lung abscess)

BACTERIAL PNEUMONIA

The relative incidence of the bacterial pneumonias, as compared with those due to viral or other agents, has become a matter of controversy and probably will remain so until simple methods for the aetiologic diagnosis of all nonbacterial pneumonias become available. In spite of this, the bacterial pneumonias are still the most important group because: (1) the mortality in patients who are treated sympathetically is higher than that of any other group; (2) specific aetiologic diagnosis is more often and more readily established in bacterial pneumonias by relatively simple bacteriological methods; and (3) what is most important—definitive or curative treatment, based upon the proper selection of an antimicrobial agent that is most effective against the causative organism, may be expected to yield the most satisfactory results, not only symptomatically but also by markedly reducing the mortality.

Pneumococcal Pneumonia—These are by far the most frequent of the bacterial pneumonias. Clinically, cases of pneumoccccal pneumonia correspond most closely to the classical "lobar pneumonias" with characteristic symptomatology and physical roentgenographic findings from which the aetiology can be predicted with a high degree of accuracy. The onset is sudden, usually during or soon after a common cold, with a shaking chill, or pleuritic pain, or both; and is soon followed by fever, dyspnoea, cough, and expectoration of rusty sputum. The physical signs in the lungs and the roentgenographic picture as they develop indicate consolidation, mainly lobar in distribution. The leucocyte count is moderately elevated, but in very severe cases it may be low, and in patients with purulent complications it may be very high, but in neither case, the polymorphonuclears greatly predominate. Properly stained smears of the sputum show polymorphonuclear leucocytes and red blood cells in the early stage and of course, the characteristic pneumococci. Repeated blood cultures in untreated cases may yield pneumococci in about 30 per cent of patients, but positive results are obtained in a small proportion of cases when only a single culture is made before specific therapy is started; they are rarely positive after effective therapy is begun.

The treatment of pneumococcal pneumonia is highly satisfactory. Penicillin is the drug of choice and may be used in any of the systemic forms and in moderate doses. Aureomycin and terramycin, however, are just as effective as penicillin; a daily dose of 1 or 1·5 grams of either of these agents, given in 250 mg. amounts, is usually adequate. Pneumococci resistant to penicillin, aureomycin, or terramycin have not been encountered, and strains of all types are equally sensitive to each of the antibiotics.* The sulfonamides, especially sufadiazine, have also proved highly effective in the usual full doses when given with the usual precautions. Treatment is usually continued for 3 to 4 days after the temperature has reached normal, except that longer treatment is indicated if it is begun late in the disease or if complications are already present.

The most frequent complication is pleural effusion; this remains sterile if effective therapy is begun early, and under these circumstances it requires no special treatment beyond that of a diagnostic thoracotomy to determine that the fluid is sterile. Infected effusions, that is empyemas, may be treated effectively by repeated withdrawals of fluid by thoracentesis followed by intrapleural injections of penicillin; if such treatment is begun early and carried out properly, surgery is now rarely required. Other focal pneumococcal complications may occur if treatment is begun late in the disease; such complications may also yield to systematic treatment, and local penicillin instillations are used if the lesion is accessible.

*As a result, type-specific antipneumococcus serums no longer have a place in the treatment of pneumonia.

The prognosis of pneumococcal pneumonia is excellent with early treatment. Deaths from this disease nowadays are confined almost exclusively to patients in whom treatment is delayed until they are already moribund, and to those who have other serious underlying diseases which themselves may be fatal.

Haemolytic Streptococcal Pneumonia—This form of pneumonia varies markedly in frequency at different times and in different localities; it is widely prevalent only during epidemics of haemolytic streptococcal infections or when measles or influenza are epidemic in areas where the streptococcus is also prevalent. The strains of streptococci involved are of various types in Group A. The disease usually begins as a pharyngitis or a tonsillitis, and then spreads by way of the lymphatics along the larynx, trachea, and bronchi to the peribronchial and interlobular spaces, with early involvement of the pleura. This form of pneumonia is therefore bilateral and patchy, and may be associated with peribronchial abscesses and the rapid development of serosanguinopurulent pleural effusions. Clinically, there are repeated chills or chilly sensations, particularly early in the disease. There is also presternal soreness and blood or blood-streaked sputum. Bacteraemia is less frequent than with pneumococcal pneumonia; but characteristic chains of cocci are seen in smears of the sputum, which also show polymorphonuclears and red blood cells.

Treatment of haemolytic streptococcal pneumonia is essentially the same as for pneumococcal pneumonia; but, although the organism is more sensitive to penicillin than is the pneumococcus, larger doses and more prolonged therapy may be required in order to maintain effective concentrations in the necrotic exudate and in the pleural effusion until they are resolved. Aureomycin, terramycin, and probably also erythromycin are highly and perhaps equally effective. Treatment of the metapneumonic empyema is essentially the same as for early pneumococcal empyema. Treatment of the pneumonia should be continued for 7 to 10 days after the temperature has reached normal and the patient has become symptom-free. Group A streptococci resistant to any of the effective antibiotics mentioned have not been encountered. Sulfonamides, particularly sulfadiazine, may also be highly effective; but they act more slowly, and sulfonamide-resistant strains have been encountered even in epidemics.

Staphylococcal pneumonia—This is not a very common form of pneumonia, but one that is being encountered with increasing frequency in recent years. As a primary disease, it is ordinarily seen most often in infants and young children; however, it may become highly prevalent in adults in certain areas, particularly as a complication of epidemic influenza. Under each of these conditions, this is a descending infection characterized by tracheobronchitis with a spread to the pulmonary perenchyma and early abscess formation in the peribronchial areas. There is also a fulminating

form with a diffuse haemorrhagic and oedematous exudate; this is seen almost exclusively during epidemics of influenza, and was noted in a number of areas during the great pandemic of 1918. In infants, the abscesses may form early communication with the pleura, giving rise to pyopneumothorax; this also occurs in adults, but less frequently. In children with pancreatic fibrosis (pulmonary viscoidosis) the staphylococcus may be a major incitant in the chronic pulmonary involvement. At all ages this disease may lead to chronic pulmonary fibrosis, bronchiectasis, and chronic bronchopulmonary suppuration. There is also a metastatic form, complicating staphylococcal sepsis, in which the lung participates in the "pyemia"; the clinical picture in the lungs in such cases is one of multiple pulmonary abscesses.

The characteristic clinical picture includes: an onset, often during or shortly after an attack of influenza or other illness; symptoms and signs of laryngotracheobronchitis with scattered crepitant rales; purulent sputum, often diffusely mixed with blood and showing the typical clumps of staphylococci in smears; the radiographic findings in the lungs, first of nodular densities and later of areas of rarefaction, mostly in the peribronchial region. The leucocyte count varies, polynuclear leucocytosis being most frequent but low white counts being encountered, particularly in cases complicating influenza.

The proper selection of treatment for staphylococcal pneumonia is highly important, not only because of the seriousness of the disease but because—in contrast to the uniform sensitivity of pneumococci and haemolytic streptococci—there are marked differences in the sensitivity of different strains of staphylococci to antibiotics. Sulfonamides alone are not very effective, and their role in combination with antibiotics is uncertain. Penicillin is the drug of choice in infections due to sensitive strains, but the frequency with which such sensitive strains are encountered has been decreasing progressively. Aureomycin and terramycin are effective against a much larger proportion of strains and chloramphenicol, though less active generally, may be the most effective when the causative strain is resistant to the other three agents. Streptomycin may also be useful, but primarily in combination with one or another of the antibiotics. When all of these fail, the cautious use of bacitracin intramuscularly may be undertaken. In staphylococcal pneumonia, therefore, it is important to obtain the incitant organism, test its sensitivity to available antibiotics, and select or change the therapy according to the results of these tests. Recently erythromycin has proved highly effective *in vitro* against pathogenic staphylococci, but its use in staphylococcal pneumonia has not yet been reported. In other staphylococcal infections, however, the effectiveness of erythromycin has often been vitiated by the rapid development of resistance in the staphylococcus.

Regardless of the agent chosen, treatment must be intensive and prolonged. If penicillin is used, it should preferably be given as the aqueous sodium or potassium salt, a minimum of 250,000 units being used every 3 or 4 hours until the acute phase of the disease is well passed. Aureomycin or terramycin should be given in divided doses of 2 or 3 grams a day, and chloramphenicol in doses of 4 grams daily, so long as those doses are tolerated. Whichever drug is used, treatment should be continued for at least 10 days to 2 weeks after all evidence of active infection has subsided. If abscesses or empyema have already developed, the treatment may have to be carried out longer, with intrapleural penicillin being used in cases of empyema in which the staphylococcus is sensitive to that agent.

The mortality in symptomatically treated cases, when no antimicrobial agents are used, is usually higher than that of pneumococcal pneumonia; in children and in the aged it may be over 50 per cent. The results of chemotherapy are likewise not so favourable as in pneumococcal or streptococcal pneumonias. Some reduction in mortality was achieved with sulfadiazine and sulfathiazole. With proper antibiotic treatment, however, deaths are now infrequent in patients who are properly treated within a reasonable time after the onset of the disease, though disability may still be quite prolonged.

Friedlander's Pneumonias—These, too, are relatively infrequent but very serious infections. They are seen most often in patients over 40 years old with chronic bronchopulmonary urinary, or gastro-intestinal tract infections; in chronic alcoholics; or in persons with other debilitating diseases. *Klebsiella pneumoniae* of types A and B are the common ones found but Type C strains have also been implicated. The pulmonary lesion is patchy, but rapidly becomes confluent; producing a massive, heavy consolidation with the characteristic gelatinous mucoid, brownish-red exudate, which later becomes purulent. The most important pathological feature, however, is the rapid formation of necrosis in the lung, which may result in large confluent excavations when there is a communication with the bronchus and evacuation of some of the exudate.

Clinically, the illness in Friedlander's pneumonia usually comes on very acutely, with dyspnoea, cyanosis, and pulmonary consolidation progressing rapidly. There usually are also signs of the chronic underlying bronchopulmonary infection or other illness. Early in the disease the sputum is bloody, and rapidly acquires a gelatinous or currant-jelly appearance. Stained specimens show large numbers of the thick, heavily capsulated, gram-negative bacilli. Cultures of the sputum give the characteristic large mucoid colonies. Later the sputum becomes purulent, but the brownish-red colour may persist for some time. In severe cases the organism may be recovered from the blood stream.

Antimicrobial therapy is equally effective against *Klebsiella pneumoniae* of all types. The most effective and rapidly acting agent is streptomycin, which is of course, given intramuscularly; and this is the drug

of choice for starting treatment. The dose is 2 to 4 grams a day. This may, from the start, be effectively combined with aureomycin or terramycin orally (or intravenously at first, if necessary), and these antibiotics are useful for sustaining the therapeutic effect. The use of streptomycin alone for the continued therapy may be hazardous, as streptomycin-resistant strains may rapidly develop and persist for long periods in the necrotic areas in the lung. Streptomycin may, therefore, be discontinued shortly after the fever and acute symptoms have subsided. The broad-spectrum antibiotics must be continued for two to three weeks longer while the abscesses either heal or become walled off. Chronic bronchopulmonary suppuration may result from this disease.

The mortality in patients not treated with antibacterial agents is high, and approximates 100 per cent in bacteraemic cases. It may still be as high as 50 per cent with intensive therapy, but most of the fatalities occur in patients in whom treatment has been delayed too long or in those who have serious complicating or debilitating diseases.

Pneumonias due to Haemophilus Influenzae—These are not infrequent in infants and young children; in them, Type B strains are usually implicated, and the disease often begins as a severe laryngotracheobronchitis. In adults *H. influenzae* (almost always untypable strains) is sometimes the only or predominant organism in the sputum of patients with pneumonia who have underlying chronic bronchopulmonary infections, or after they have been treated for pneumonia which was thought to be due to other organisms. In the great pandemic of influenza of 1918 and in the earlier one, this organism was frequently found in uncomplicated cases and in those with pneumonias. The occurrence and role of *H. influenzae* in pneumonias nowadays is often not recognized until after the patient has been treated either with sulfonamides or with penicillin. In some of the pandemic cases, there was a fulminating and acutely fatal form with an acute haemorrhagic or oedematous exudate in the lung. In these cases, emphysematous blebs often formed and gave rise to pneumothorax with or without empyema. This complication has probably not been encountered since the pandemic of 1918. In cases observed after treatment with antibiotics, there is usually a copious amount of mucopurulent sputum, smears of which show large numbers of characteristic tiny pleomorphic gram-negative bacilli.

In infants and young children, it is imperative to start therapy early in order to avoid the obstructive lesions that may themselves prove fatal. Streptomycin and all of the broadspectrum antibiotics are highly and about equally effective. Laryngeal or tracheal obstruction may occur as a complication in young children, and may require emergency tracheotomy. One can only surmise that, should a pandemic form of influenza similar to that of 1918 recur, and *H. influenzae* be involved in the complicating pneumonias, or should *H. influenzae* pneumonias accompany influenza viral infections as we now know them, early and intensive treatment with effective antibiotics would be expected to prevent many of the fatalities attributable to these diseases.

Other Bacterial Pneumonias—The role of *Streptococcus viridans* in patients with pneumonia, in whom that is the only or predominant organism, is difficult to assess, since this organism is a common saprophyte found in the mouth; it almost invariably appears in sputum or throat cultures in patients under treatment with sufonamides, and often after antibiotic therapy. The demonstration of strains of this organism in cultures of blood and pleural fluid of occasional patients with pneumonia has been reported; so its pathogenic role may be accepted. Strains of this organism vary in their sensitivity to penicillin, to the broad-spectrum antibiotics, and to erythromycin. Penicillin in large doses may be effective in some cases, but aureomycin and terramycin might be expected to be more effective. There is no experience with erythromycin in pneumonias due to these organisms, but the same is true of the other antibiotics as well.

Other streptococci, as well as organisms of the coli-aerogenes group, and proteus or pyocyaneus organisms may all cause pneumonia, but probably do so only very rarely. They are, however, encountered as superinfections following treatment in cases of pneumonia due to the more common respiratory pathogens, when the lesions have not been cleared by chemotherapy. If treatment is then changed to an agent which is effective against the new invader, these organisms are then sometimess cleared. However, the patient is frequently in poor general condition or even in a terminal state at that time, and little benefit may result under such circumstances. It is, therefore, imperative to study the sputum and blood of patients with pneumonia when they do not respond favourably to the chemotherapeutic agent employed, or when new lesions develop in the course of treatment, in order to determine if such new organisms may be responsible, and then to change the therapy accordingly. Such changes in treatment, however, should not be given merely because different organisms are seen in the sputum or reported in culture; there should be reasonable evidence that these organisms are, or may, be responsible for the failure of the previous treatment and for the progressive disease.

There are also occasional cases of acute pneumonia having a clinical picture not unlike that of pneumococcal pneumonia, but in which tubercle bacilli are found in the sputum only during the acute disease. Such a pneumonia may clear without any specific therapy, and an underlying tuberculous infection in the lung or elsewhere may later become evident. If the tuberculous aetiology is recognized during the acute stage, prolonged treatment with streptomycin and para-aminosalicyclic acid should be started at this time.

Such therapy may then be expected to prevent the later appearance or spread of tuberculous lesions elsewhere.

A number of additional bacteria which are usually associated with systemic infections, or with local infections either in the respiratory or other organs, may give rise to pneumonia. In pertussis, in typhid fever, or other salmonella infections, in meningococcal infections or occasional cases of brucellosis, a complicating pneumonia may be caused by other respiratory pathogens; but the causative organism of the underlying disease can sometimes be found in the sputum, and its causal relation to the pulmonary lesion cannot be ruled out. The use of appropriate antibacterial therapy directed against the primary disease is usually effective against the pneumonia as well. This is not always helpful in delineating the causal agent of the pneumonia, which may be a different organism but equally susceptible to the agent being used in the treatment. Tularemia or plague, however, may produce a primary pneumonia; each of these infections is susceptible to streptomycin, and perhaps even more so to aureomycin or terramycin. However, because of the destructive nature of the pneumonic forms of these infections, prolonged therapy is indicated.

Finally, there may be cases of pneumonia in which more than one pathogenic organism is obtained from cultures of sputum and occasionally from blood or purulent foci. In most instances only one of the strains will be primarily involved, but some cases may be genuine "mixed" infections. It may be impossible to determine which of the organisms is the primary or significant invader. From the therapeutic point of view, it is now possible to select the antimicrobial agents so as to include those effective against all of the organisms which may be involved.

Fungal Infections

A number of fungal infections, some of which are listed in Table 1, are associated with pulmonary lesions—either as their only important manifestations or as part of a systemic infection. Under some circumstances, the pulmonary involvement may be acute and may simulate pneumonia. The recognition of the true causative agent in such cases requires: (1) an awareness of the possibility of their occurrence; (2) a careful epidemiologic history to circumscribe the possible sources and nature of the organism; and (3) either the identification of the organism from tissue sections, sputum smears, or cultures, or by demonstration of the development of a specific cutaneous reaction or serologic response.

Details of the individual disease entities are beyond the scope of this paper. Mention need only be made, in relation to moniliasis, that such a diagnosis is not usually justified merely by the demonstration of a characteristic organism in smears or cultures of sputum, particularly in patients under treatment with antibiotic agents. Genuine cases of moniliasis of the lungs are extremely rare, the relation of the monilia to the pulmonary lesions not having been established in the great majority of reported cases. It may also be stated that there is at present no specific therapy generally accepted as highly effective in any of the fungus diseases. However, large doses of penicillin and sulfadiazine have proved beneficial in many cases of actinomycosis and there is recent evidence suggesting that stilbamidine may be effective in North American blastomycosis and in an occasional case of actinomycosis. This, however, is a toxic drug and should be used with caution.

Parasitic Diseases

What has been said about fungal infections is true, to a large extent, about parasitic diseases. A partial list of such diseases, in which pulmonary lesions associated with acute signs and symptoms have been described, is given in Table 1. Many of these diseases are associated with eosinophilia, and this may be quite marked. In India and in South-east Asia, the so-called tropical eosinophilia has been associated with many known parasites, and even mites have been described in the sputum of such cases; such sputum, when available, also contains numerous eosinophils. Some cases of tropical eosinophilia associated with pulmonary infiltration, and in which known parasites have not been implicated, are said to respond dramatically to arsenical therapy.

In amoebiasis, symptoms simulating pneumonia with pulmonary signs may be associated with extension through the diaphragm of an hepatic abscess to involve the pleura, lung, and pericardium; and an abscess of the lung may result. Specific treatment in such cases is the same as for hepatic amoebiasis. Malaria is sometimes associated with signs and symptoms of pneumonia; but it is essential in this diseasse and in other parasitic diseases to ascertain first whether or not there is an accompanying bacterial infection of the lung which, if found, should also be treated specifically, depending on the bacterial agent involved.

Viral and Rickettsial Pneumonias

The only well-established viral and rickettsial agents which give rise to pneumonia as their sole or major manifestation of significance in man are the influenza viruses, viruses of the psittacosis ornithosis group, and the rickettsias of Q fever. However, except during epidemics or pandemics of influenza the most prevalent and important of these nonbacterial pneumonias are probably the so-called primary atypical pneumonias; these are the ones generally referred to as "virus" or "viral pneumonias". These pneumonias are undoubtedly due to filtrable agents; however although many such agents have been reported, not one has been firmly and incontrovertibly established.

Clinically and pathologically, all the viral and rickettsial pneumonias may be indistinguishable in so far as the lesions in the lungs are concerned, and in regard to the signs and symptoms that are referable to

those lesions. There may be variations in extent and severity, and minor differences in the tissue responses. Anatomically, the lesion is primarily in the mononuclear and plasma cells. Polymorphonuclear cells are rare, except perhaps in the early stages; but they are often found in the bronchial lumens in the later stages. Fibrin is usually scant except in some cases of psittacosis and fever. The alveolar lining epithelium becomes swollen and spindleshaped, and an alveolar exudate eventually forms which consists of monocytes, histiocytes, lymphocytes, and alveolar lining cells. Oedema and haemorrhage of varying degree may be present in the fulminating cases of influenza, and occasionally in primary atypical or other viral pneumonias. The tracheobronchial epithelium is spread except in some cases of influenza where this epithelium may be desquamated in some areas. There are also areas of atelectasis which, if extensive, may also be associated with areas of emphysema in other parts of the lung. Inclusion bodies have only very rarely been seen in the lungs of an occasional case of human psittacosis, but not in any other established viral disease of the lung.

The symptoms are those of severe cough, increasing dyspnoea, presternal distress of soreness, severe headache, and chilly sensations or repeated chills—but not usually a single severe chill. The sputum is usually scanty until the latter part of the illness; it is mucoid at first and may later become purulent; bloody sputum is infrequent except in some of the fulminating cases. Mononuclear cells are seen in smears, and bacteria are scarce or not found. Pleuritic pain is present only in occasional cases, but presternal pain is frequent. Physical signs in the lungs may be absent for several days; moderate dullness and showers of rales are the major physical findings, and signs of consolidation are rarely made out except in patients who develop large areas of atelectasis. Pleural effusions are rare. Herpetic lesions are also rarely seen, in contrast to their frequent occurrence in bacterial pneumonias. X-ray films of the chest characteristically show miliary nodular areas of only slight or moderate density except where there are areas of atelectasis which, if they become confluent, give the appearance of solidification. The white blood count is usually normal or low, and there is no polynuclear predominance except late in the disease when there may be a leucocytosis; at these times there is usually a bronchitis with purulent sputum. There are deviations from this picture, some of which will be noted under the specific diseases.

Pneumonia and the Influenza Viruses—There is always a significant and often a marked increase in the number of cases of pneumonia and of deaths from pneumonia during epidemics of influenza. Most of these pneumonias are due to bacteria, but studies in recent years have indicated that at least one half or more of the cases of bacterial pneumonia which occurred during influenza epidemics had infections with the epidemic strain of influenza virus either at the same time or within the preceding few days. This was evidenced both by the isolation of the virus and by the demonstration of specific antibodies against that virus during convalescence. In patients dying of pneumonia at such times, influenza A and B viruses have been isolated from the lungs which have shown histologic evidence of both the viral and the bacterial infections. In occasional cases, however, even in the absence of specific antibacterial therapy, no evidence of bacterial infection was found. Influenza viruses have been isolated from such cases, and the pathological findings in fatal cases are consistent with those of the purely viral infection.

The bacterial pneumonias complicating influenza may themselves be indistinguishable from similar pneumonias not associated with influenza viral infections. In some instances, however,—particularly when the staphylococcus is implicated—the disease may have a rapid or fulminating course, with early development of oedema, haemorrhage, and peribronchial areas of necrosis, clumps of staphylococci being found primarily in such cases. These findings have been observed with influenza A and B strains, but are probably also to be observed with the A' and the recently described Type C strain.

The diagnosis of influenza viral pneumonia can be suspected and established readily during epidemics, by isolation of the virus from sputum or throat washings or by demonstrating a rise in antihaemagglutinins or complement-fixing antibodies for the specific virus in convalescent serum as compared with the titres found in acute phase samples. Sporadic cases can be suspected only if they are of the fulminating variety and if materials are promptly collected for viral studies. The relative role of the viral and bacterial agents is difficult to delineate clinically. There is no specific treatment for the influenza viral infection itself, but the complicating bacterial pneumonias respond to antibacterial therapy in the same manner as similar cases not associated with influenza virus.

Psittacosis (*Ornithosis*)—Psittacosis was first recognized as a severe pneumonia having a typhoid-like picture, and as being transmitted from sick parrots to man. It may occur in epidemics among persons exposed to sick birds, either single ones or large numbers of them, as in aviaries. In recent years, microorganisms indistinguishable from those found in parrot fever have also been recovered in many parts of the world from a great variety of species of both wild and domestic birds, including barnyard hens and pigeons; and human infections transmitted from such birds to man have been recorded.

The causative organisms are large viruses related to the agents of lymphogranuloma venereum and of trachoma. They have all recently been classified in the Family *Chlamydozoaceae*, and the psittacosis organisms have been included with other species that are cultivable in chick embryos under the Genus *Myagewenella*. A number of species in this genus have also

been found in mice and cats, and spontaneous infection of young kittens with these agents has been reported.

The human disease has almost always been traced to contact with sick birds, but person-to-person spread of a severe infection due to one of these viruses, and having a high mortality, has been noted. The disease is usually of more than moderate severity, and is often associated with large areas of atelectasis and consolidation of the lung. It has a mortality of 10-30 per cent in patients treated symptomatically without antimicrobial therapy.

Infections of embryonated eggs with the psittacosis group of viruses are variably affected by sulfadiazine and penicillin, but are all quite susceptible to treatment with aureomycin and terramycin and, to a less extent, also to chloramphenicol. Sulfonamide drugs have not been very helpful in the human disease, but penicillin in large doses has proved beneficial in some cases. The response of human cases to penicillin is usually much less striking than in pneumonias due to susceptible bacteria. Aureomycin, in the few available reports, has proved much more effective in the human disease; it has been given in divided doses totalling 2 to 4 grams a day. Terramycin may also be expected to have a similar beneficial effect.

Other viruses—There are other known viruses that may produce lesions in the lungs of appropriate animals inoculated intranasally or intrabronchially, but the only ones that have been identified definitely in human cases of pneumonia are those of lymphocytic choriomeningitis and of smallpox—the former, in a few fatal cases, associated with lesions of the central nervous system and the skin; the latter, in severe cases of smallpox. In some cases of smallpox there may also be secondary infections with bacteria in both the cutaneous and the pulmonary lesions, and such cases may be greatly benefited by the appropriate antibacterial agent; staphylococcus is one of the important secondary invaders in these lesions. There is no specific treatment for lymphocytic choriomeningitis or for smallpox.

There are additional cases in which known viral agents have been considered as the cause of pneumonia, but either the relation of the agent to the human disease has not been fully established (as in the case of the feline pneumonitis virus) or the evidence for the presence of the significant pulmonary lesion was incomplete (as in the case of the virus of lymphogranuloma venereum). These two viruses are species sof *Myagawanella* and are susceptible to aureomycin and terramycin and to a less extent also to chloramphenicol.

Measles, chicken pox, and pandemic influenza (of the 1918 variety) are undoubtedly of viral aetiology, but the offending viruses have eluded investigators; they have not been isolated nor transmitted to nonhuman hosts and cannot be used in serologic tests. Pneumonia occurring in these diseases may be predominantly of bacterial origin, but in some cases there are extensive pulmonary lesions without any significant bacterial incitant being identified in blood or sputum during life, or in the pulmonary lesions at autopsy. The pulmonary lesions are similar to those found in other viral pneumonias, and none of the known antimicrobial agents may be expected to have any great effect. However, the appropriate antibacterial agent—used early and intensively—may be expected to be highly beneficial and life-saving to the extent of which the bacteria are causally involved in the pneumonia. The same is true of the cytoplasmic inclusion pneumonia of infants.

Primary Atypical Pneumonia (Viral Pneumonia)—As previously noted, this may be numerically the most important of the nonbacterial pneumonias, particularly in adolescents, in young adults, or during seasons when the disease is unusually prevalent. Clinically, the picture in mild cases blends with that of cases of simple acute upper-respiratory-tract infections or acute tracheobronchitis in which there is no demonstrable lesion in the parenchyma of the lung and no bacterial incitant can be implicated. In severe cases there may be extensive infiltration throughout both lungs, and all intermediate grades are observed. The characteristic clinical picture has been described above.

The diagnosis is often difficult to make in the early stages, since recognizable signs in the lungs may be absent for several days and even after the characteristic mottle or nodular lesions of the lungs are easily seen in the x-ray. The establishment of this diagnosis depends on: (1) the exclusion of bacterial or other identifiable causes, though this may be quite difficult in many instances, even in retrospect; (2) the development of the characteristic clinical picture, including the physical and x-ray findings in the lungs; and (3) the demonstration at least in cases of moderate or greater severity, of a rise in the titre of cold agglutinins in the serum or plasma usually after the middle of the second week following the onset.

It is generally agreed that the sulfonamides and penicillin are entirely without effect in this disease except for the treatment of secondary bacterial infections, which are quite uncommon duing the early stages of the disease. Although there is not universal agreement with respect to the efficacy of antimicrobial therapy, most observers have found that aureomycin is highly effective in cases of moderate or greater severity when used in doses of 2 to 4 grams a day; and even doses of 250 mg. given every 4 or 6 hours, have been found to give highly satisfactory results. With this treatment, the temperature and acute symptoms usually subside within 24 to 48 hours after the first dose. Relapses have been observed, particularly when treatment was begun early and discontinued too soon. Aureomycin should therefore be continued until the

patient has been afebrile and free from symptoms for 3 to 5 days. Terramycin is probably also equally effective, although reports of its use are few.

Rickettsial Pneumonias

Almost any one of the known rickettsial diseases may present itself in the early phases with symptoms, signs, and roentgenographic findings in the lungs simulating those of primary atypical pneumonia. The early clinical diagnosis depends upon the awareness of the possibility of the disease, largely from the epidemiologic circumstances; but it is usually suspected only after some characteristic cutaneous lesion appears when that is a feature of the disease. The definitive diagnosis depends upon isolation of the rickettsias from the blood, or more usually by serologic tests which demonstrate a rise in complement-fixing or agglutinating antibodies specifically for one of the rickettsias, or by a rise in the titre of specific proteus agglutinins in the Weil-Felix reaction. Cases have been noted particularly in epidemic typhus (including the recrudescent form, or Brill's disease), endemic typhus, Rocky mountain spotted fever, Boutonneuse fever, and South African tick fever.

Q Fever—The rickettsial infection which is more specially associated with pneumonia is Q fever. In Australia, where the disease was first described and its aetiology established, the clinical picture was said to resemble that of influenza; pulmonary lesions were not noted there. In American Q fever, however, pneumonia was the primary and significant lesion in the earliest cases to be recognized—both in those occurring spontaneously and in those acquired from laboratory contacts. In the Balkans and other Mediterranean and European countries, the same was true: that is, pneumonia was the first lesion in which the Q fever rickettsia was identified as an incident, although prior to the identification of this specific aetiologic agent it is supposed to have been associated with a severe influenza-like infection (Balkan grippe). In this country the disease has been endemic in the north-western states, and has been widespread in California. It has occurred in epidemics among people handling or exposed to livestock or their products, and there have also been several laboratory outbreaks. Both in this country and in Australia, human cases have been encountered in certain areas where the rickettsias of Q fever have been demonstrated in ticks.

The pneumonia in Q fever may be severe and prolonged and accompanied by marked prostration; otherwise it resembles other forms of atypical pneumonia and psittacosis. As already noted, the diagnosis is rarely suspected except under proper epidemiologic circumstances. Because of the very marked infectivity of the agent when it is used in the laboratory, the diagnosis by isolation from blood or sputum should not be attempted except by those who are properly equipped for the purpose and have taken the necessary protective measures. The diagnosis can be established retrospectively by the demonstration of a rise of specific complement-fixing antibodies in the serum during convalescence. When a diagnosis of Q fever has been made in a patient, by the routine use of such a diagnostic test in general surveys of pneumonia patients, it has usually been possible to ferret out either an exposure in a laboratory where the virus is being handled, or some association with infected livestock.

All of the rickettsial infections are susceptible to aureomycin and terramycin when used in doses of 2 to 4 grams a day, or to chloramphenicol in doses of 3 to 4 grams a day. The rapidity with which fever and acute symptoms respond to treatment with these agents varies somewhat in the different diseases, but improvement is usually evident and often quite marked within 24 hours after treatment is started. Occasional cases of Q fever, however, continue to have evidence of active infection during prolonged periods of treatment. Relapses of fever and symptoms may occur in patients in whom treatment was begun early in the course of the disease and discontinued too soon; such cases, however, respond again the same satisfactory manner when the same treatment is resumed.

Miscellaneous Acute Pulmonary Lesions

There are a number of special forms of acute pulmonary lesions associated with signs and symptoms simulating those of specific infectious pneumonias; some of them are listed in Table 1. It is highly important to suspect and recognize them, either because it is often possible to remove the causative agent or because one may thus obtain a clue to a serious underlying disease.

Loeffler's Syndrome—This consists of transient or migrating pulmonary infiltrations with eosinophilia, and is now generally recognized as being allergic in origin, although the inciting agent is generally unknown. It is distinguished from tropical eosinophilia, which is almost always associated with parasitic infestation. Eosinophils are present in the peripheral blood and in the pulmonary lesions—at least, eosinophils are found in abundance in the sputum unless there is an accompanying bacterial infection in addition. In the latter event, treatment with a specific antibacterial agent will change a polynuclear leucocytosis into an absolute eosinophilia in the peripheral blood, and eosinophils will rapidly replace most of the pus cells in the sputum. Variable results are reported from the use of the antihistaminic drugs in this disease, but ACTH and cortisone have produced beneficial effects in some reported cases of Loeffler's syndrome. They would not be expected to benefit the tropical eosinophilias and, indeed, may be harmful in parasitic infestations.

Rheumatic pneumonia usually accompanies other more characteristic manifestations of rheumatic disease. During acute rheumatic fever, the presence of physical

signs or x-ray evidence of scattered pulmonary infiltrations or large areas of consolidation, when associated with fever, dyspnoea, and often with bloody sputum, must be attributed to the rheumatic disease unless specific respiratory pathogens are readily obtained from the sputum or blood or are identified by serological reactions in the blood. Pulmonary infarcts and pulmonary congestion due to cardiac failure may simulate rheumatic pneumonia, and may be difficult to differentiate from it. The rheumatic pulmonary lesions are usually transient, and they clear as the rheumatic activity subsides. The rheumatic pneumonia is not affected by any antimicrobial agents. Symptomatic improvement may result from the use of ACTH and cortisone, although this is not invariably true.

Inhalation Pneumonias—The reaction to the inspiration of oily substances may give rise to acute symptoms and pulmonary infiltrations which may later become chronic and granulomatous. The early recognition of the cause, and the prompt application of measures to prevent further inhalation of the offending agent, are the most important steps to take in order to avoid serious chronic disability. The same is true of other inhaled chemicals, which may produce acute exudation in the lung along with laryngotracheobronchial irritation. The prevention of infection, in such cases, by isolation of the patient or by the use of antibiotics when necessary, is important in order to minimize the damage in the lung until repair takes place; but removal of the irritant is of primary importance. Some inhaled foreign bodies may result in the rapid development of pulmonary infiltration, and early necrosis of the bronchi and surrounding pulmonary tissue may ensue. This may be due, in part, to mixed infections with bacteria carried down with the foreign bodies. Some relief may be obtained by chemotherapy in so far as infection plays a role, but removal of the foreign body—usually through a bronchoscope—is essential in order to effect a cure and to avoid further damage.

Pulmonary Hemosiderosis—This is a rare condition that has been observed primarily but not exclusively in children. It is associated with recurrent episodes of chills, fever, cough, and the rapid development of anaemia. There may be haemoptysis and haematemesis, and occasionally abdominal pain. Physical signs may be negligible or completely absent, but the x-ray findings may be very striking and may simulate those of miliary tuberculosis. The episodes occur at irregular intervals, and the disease is almost invariably fatal. It is readily recognized as soon as the diagnosis is suspected. The cause is unknown, and no effective treatment is available.

Summary and Comments

Pneumonia may be caused by a large variety of agents. The aetiology of many primary cases can be suspected from data in the history, from epidemiologic considerations, and from physical and x-ray findings in the lungs. In the bacterial pneumonias, the diagnosis is established by isolation of the specific inciting agent. In some of the viral and rickettsial pneumonias, the causative agent can also be isolated, but for the most part the diagnosis in these cases is retrospective and depends on the demonstration of a rise in the specific antibody in the sera during convalescence. Pneumonia may also be an integral part, or an early and major manifestation of, systemic infectious diseases due to bacteria, viruses, fungi, or parasites, and of some diseases not considered to be primarily infectious. Finally, pneumonia—particularly pneumonias of bacterial origin—may occur as complications of other serious diseases or infections.

Specific treatment is available against the bacterial pneumonias, and is highly effective in almost all instances—particularly when it is properly chosen, started early, and maintained until the active stage of the infection has been well passed. In infections associated with necrosis in the lungs or with early development of focal purulent complications antimicrobial therapy should be continued until these necrotic areas or purulent foci have become healed or well stabilized.

The sulfonamide drugs are effective chiefly in pneumococcal pneumonia; but penicillin is probably the drug of first choice in these cases, in haemolytic streptococcal pneumonias, and in staphylococcal pneumonias, if the organisms are susceptible. (Erythromycin (Ilotycin) may also prove to be highly effective in the pneumococcal and haemolytic streptococcal infections. The broad-spectrum antibiotics—particularly aureomycin and terramycin—are also as effective as penicillin in all of these, and in addition are the drugs of first choice in pneumonias due to gram-negative bacilli; but streptomycin may also be effective in the latter cases. The broad-spectrum antibiotics are, at the present time, the only highly effective drugs in psittacosis and related viral infections, in all rickettsial infections, and in primary atypical pneumonia. Because chloramphenicol has been implicated as the cause of many fatal cases of aplastic anaemia, this agent is reserved for use only in severe cases due to sensitive organisms, and in which none of the other antibiotics is effective or is not tolerated.

There are no specific agents which are effective against pneumonia due to other known viruses, although the bacterial pneumonias complicating such viral infections may be as susceptible as primary pneumonias in which the same bacteria are causative. The treatment of fungal, parasitic, and miscellaneous forms of pneumonia is directed against the specific cause in each instance.

CASE NOTE

A CHOICE BETWEEN HAVING MORE MICROPHTHALMIC BABIES AND STERILISATION

A. K. BAGCHI, M.B.B.S.(CAL.), D.V.A. SURG. (VIENNA),
Calcutta

The choice between having more micropthalmic babies and sterilisation has been a dilemma to a young married couple. Mr. N. S., a Hindu, Government Officer aged 34 years, apparently normal in all respects was married to Mrs. K. S. (*nee* M.) on the 1st of December 1946. Both of them belong to the Varendra group of Bengalee Brahmins, which is a moderate sized community. The Varendra Brahmins do not usually marry outside their group. Though almost all the Varendras are distantly interrelated, yet their marriages are never consanguinous. There is no custom of marrying cousins.

The man (Fig. 2) is an apparently healthy 11th child of healthy parentage and the woman (Fig. 3) a healthy 3rd child of a healthy couple.

The bride had a normal menstrual cycle since the age of 13. This normality was uninterrupted until the 19th month of her marriage, when she conceived her first child and became amenorrhoeic. This pregnancy ended in an abortion in the 3rd month. Five months after the abortion she was again pregnant. This pregnancy was normal, having very few antenatal disorders of interest. She had normal confinement at full term in the Chinsurah district hospital (West Bengal).

The result was a female baby (Case 1, Fig. 4), otherwise normal excepting having an extremely small pair of eye balls. The eyelids were sagged inside the orbit, and the baby kept the eyes always closed.

On the 3rd postnatal day an ophthalmologist was consulted.

The findings were the following:

A. General: (i) A full term female baby—length (verticopedal) 55 cm. (ii) Facies—normal.

B. Ophthalmological:

(i) Lids—closed—sagged low into the orbit (resembling the appearance just after enucleation). On digital retraction of the lids the following findings were revealed:

Right eye:

(i) Bulb is extremely small, placed deep in the orbit.

(ii) Size that of a small raspberry.

(iii) Cornea—hazy—greyish white in colour—diameter about 3 mm.

(iv) Iris and pupil—not visible.

Left eye:

(i) Bulb slightly larger than the opposite side—placed at a little higher level.

(ii) Cornea—larger and clearer than the right side—diameter about 4 mm.

(iii) Iris and pupil not visible.

The eyes had a sluggish movement.

The diagnosis was congenital microphthalmia (bilateral).

FIG. 1—PATIENTS' FATHER'S MOTHER (L.P.D., F. 62, TABLE 1)

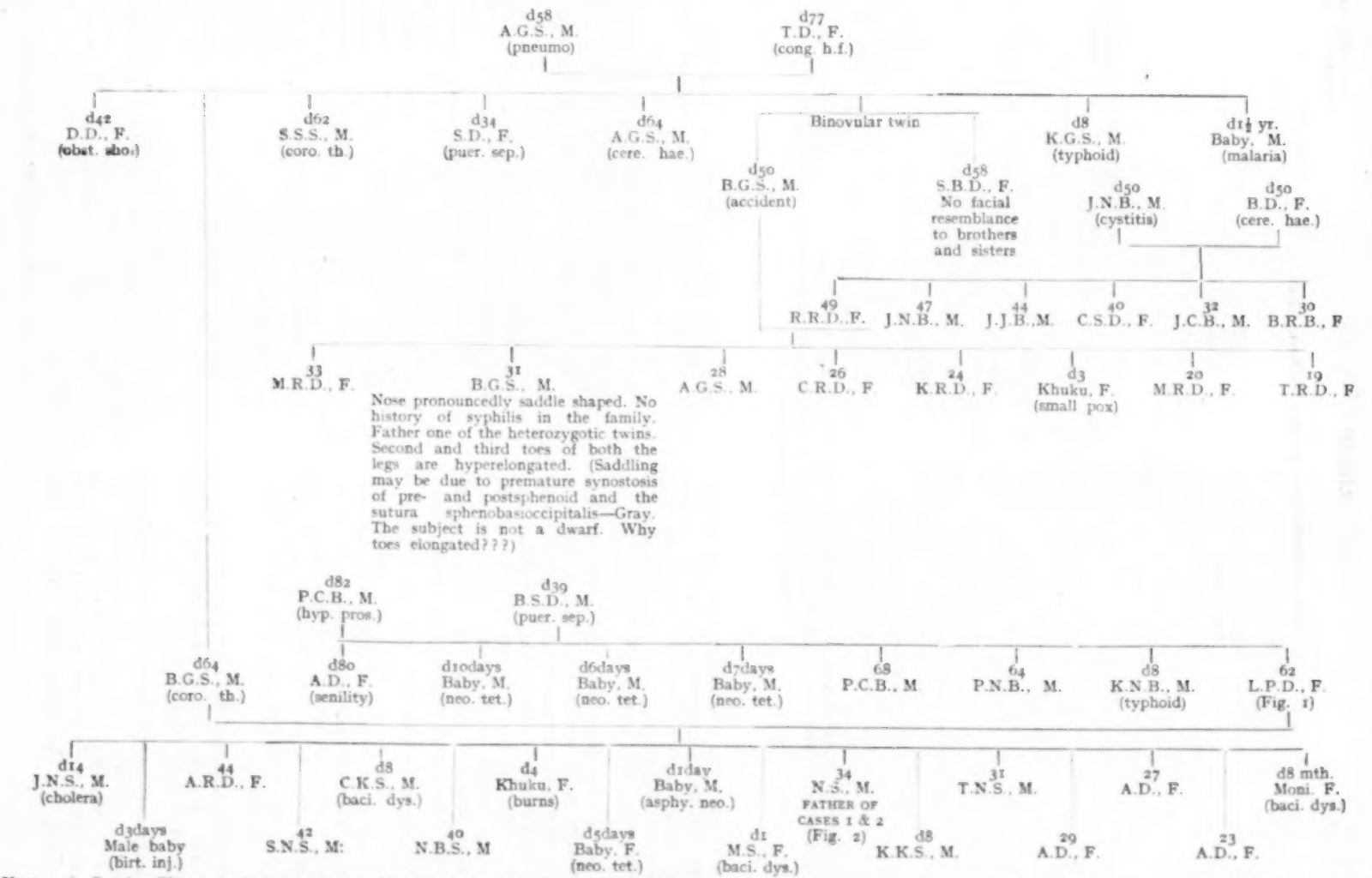
FIG. 2—PATIENTS' FATHER (N.S., M., 34, TABLE 1)

FIG. 3—PATIENTS' MOTHER (K.D., F., 24 TABLE 2)

FIG. 4 (CASE 1)—OBSERVE CORNEAE INVISIBLE

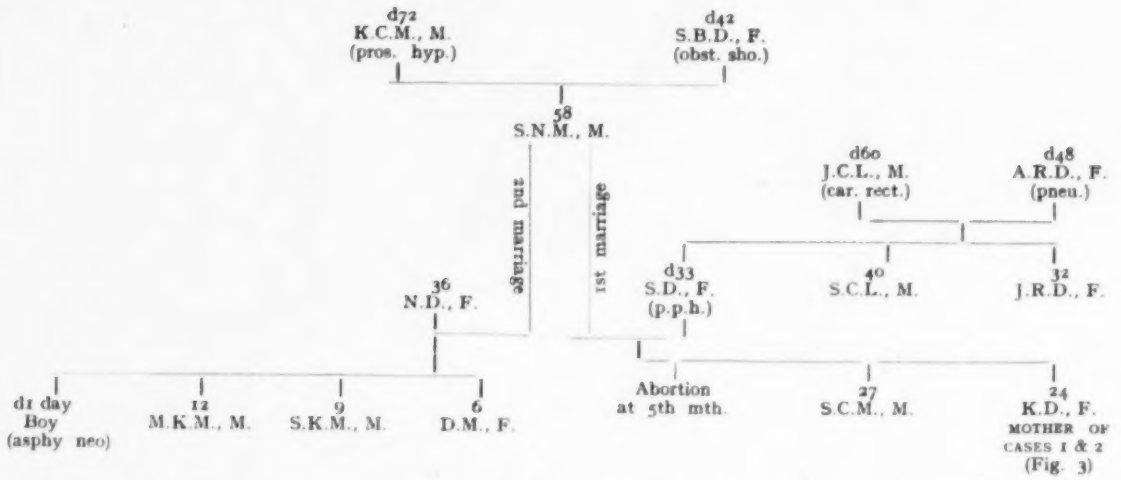
FIG. 5 (CASE 2)—OBSERVE CORNEAE INVISIBLE

TABLE 1—GENEALOGY OF THE PATERNAL SIDE


d58 A.G.S., M. (pneumo)
d77 T.D., F. (cong. h.f.)
d42 D.D., F. (obst. shock)
d62 S.S.S., M. (coro. th.)
d34 S.D., F. (puer. sep.)
d64 A.G.S., M. (cere. hae.)
Binovular twin
d8 K.G.S., M. (typhoid)
d1½ yr. Baby, M. (malaria)
d50 B.G.S., M. (accident)
d58 S.B.D., F. No facial resemblance to brothers and sisters
d50 J.N.B., M. (cystitis)
d50 B.D., F. (cere. hae.)
49 R.R.D., F.
47 J.N.B., M.
44 J.J.B., M.
40 C.S.D., F.
32 J.C.B., M.
30 B.R.B., F
33 M.R.D., F.
31 B.G.S., M. Nose pronouncedly saddle shaped. No history of syphilis in the family. Father one of the heterozygotic twins. Second and third toes of both the legs are hyperelongated. (Saddling may be due to premature synostosis of pre- and postsphenoid and the sutura sphenobasioccipitalis—Gray. The subject is not a dwarf. Why toes elongated???)
28 A.G.S., M.
26 C.R.D., F.
24 K.R.D., F.
d3 Khuku, F. (small pox)
20 M.R.D., F.
19 T.R.D., F
d82 P.C.B., M. (hyp. pros.)
d39 B.S.D., M. (puer. sep.)
d64 B.G.S., M. (coro. th.)
d80 A.D., F. (senility)
d10days Baby, M. (neo. tet.)
d6days Baby, M. (neo. tet.)
d7days Baby, M. (neo. tet.)
68 P.C.B., M.
64 P.N.B., M.
d8 K.N.B., M. (typhoid)
62 L.P.D., F. (Fig. 1)
d14 J.N.S., M. (cholera)
d3days Male baby (birt. inj.)
44 A.R.D., F.
42 S.N.S., M.
d8 C.K.S., M. (baci. dys.)
40 N.B.S., M
d4 Khuku, F. (burns)
d5days Baby, F. (neo. tet.)
d1day Baby, M. (asphy. neo.)
d1 M.S., F. (baci. dys.)
34 N.S., M. FATHER OF CASES 1 & 2 (Fig. 2)
d8 K.K.S., M.
31 T.N.S., M.
29 A.D., F.
27 A.D., F.
23 A.D., F.
d8 mth. Moni. F. (baci. dys.)

Keys: d—Death. The numerical denotes age in years but when preceded by d denotes age (in years unless otherwise mentioned) at death. M—Male. F—Female: Cause of death in abbreviation appears within parentheis after the line or lines showing name and sex.

TABLE 2—GENEALOGY OF THE MATERNAL SIDE



Keys: d—Death. The numerical denotes age in years but when preceded by d denotes age (in years unless otherwise mentioned) at death. M—Male. F—Female: Cause of death in abbreviation appears within parenthesis after the line showing name and sex.

When the baby was one month old she was brought to the eye outpatients department of the R. G. Kar Medical College Hospitals, Calcutta. Her eyes were re-examined—no improvement was apparent, only the left side showed a faint fundal glow (?).

The girl is now about four years old. She has gained sufficient height for her age. Psychically she is not idiotic, very very temperamental, can understand liking or disliking by others. She is responsive to commands. Her vocabulary is limited to papa and mamma, and similar small words, she sometimes speaks aloud irrelevant words. She is a little bit egoistic. She has a peculiar aversion for protein foods.

Ocular conditions (Fig. 4): The eye balls have increased very little in size. From her gestures it seems that she has perception of light in the left eye. She picks up pieces of white paper from the floor and tries to see it through her left eye, in doing so she rotates her chin to the left. She does the same when she sees a lighted lantern. Her eyes show a slight nystagmoid movement.

On several occasions after her birth, the blood of both parents examined for Wassermann and Kahn reactions always gave negative results.

No history of syphilis was evident in the paternal and maternal heredity. One of the cousins of the father has a congenital saddling of the nose and an unusual elongation of the second and third toes of both the legs (Table 1). The mother never suffered from rubella.

The parents took a chance on their fates, 39 months after the birth of the first child, the mother conceived again.

The pregnancy was uneventful as in the previous occasion, she delivered a full term female baby on the 3rd March, 1951. To add to the utter bad luck of the parents, this child also had the same kind of defect in the eyes as in Case 1.

Present findings on this baby (Case 2) (on 23-11-52) at 1 year 5 months are as follows:

A. General: (i) She is properly grown for her age (18 months); height—67 cm. (ii) Can walk and run. (iii) Psychically—very jolly, restless, always keeps on playing, can perceive the presence of persons near her. (iv) Vocabulary: Larger than the elder one, can imitate sounds and words. (v) No other deformities present.

B. Ophthalmological (Fig. 5):

(i) Eyes open.

Right eye:

(i) Eye ball—size smaller than normal (that of a small cherry).

(ii) Movement—nystagmoid.

(iii) Cornea—hazy—faintly visible as a greyish white disc, limbus indistinct.

(iv) Iris and pupil—invisible.

Left eye:

(i) Eye ball—same as on the opposite side.

(ii) Movement nystagmoid.

(iii)—Cornea—as above.

(iv) Iris and pupil—as above.

Fundal glow—very very faint (?).

Photo sensitivity—present in both eyes, on focussing high intensity beams on the eyes, the patient spasmodically closes her eyes.

It is interesting to note that

(i) Both the babies are females.

(ii) None of them are idiots.

(iii) In the family history no other evidences of congenital defects of the eyes are present.

(iv) One of the cousins of the patients' father shows a congenital deformity (Table 1).

Discussion

From the repetition of the same congenital defects in both the children, we can clearly understand that the cases are exhibiting a hereditary disorder.

Genetically hereditary diseases can be classified under two main headings:

(1) dominant hereditary diseases and

(2) recessive hereditary diseases.

The pathological conditions resulting from simple dominance are very easily recognised. The affected subject has an affected parent or grandparent, e.g., in cases of Huntington's chorea or sickle-cell anaemia etc. (Boyd, 1948).

The recessive inheritance is extremely difficult to be recognised from the family history of an affected subject, as in my cases. In the whole family table (Table 1) only one cousin of my patients' father shows a congenital defect (B.G.S. aged 31, having non-syphilitic saddle-nose and hyperelongation of the second and the third toes of both the legs). The recessive factors must be present in the germ cells of both the parents to be revealed as a recessive hereditary disease in the children.

DeBeer's (1951) findings do not tally with the aforesaid. He has found a strain of mice in which a syndrome of microphthalmia, coloboma retinae, albinism, curvature of vertebrae and failure of incisor teeth to erupt, is present. He holds a single recessive responsible for it. Some of the defects formerly attributed to faulty genes have now been shown to be the result of endo or exogenous toxins operating on the foetus during the intrauterine life and it is clear that congenital lesions caused by exposure of the foetus to noxious influences may be clinically indistinguishable from hereditary blemishes, of course, a deleterious influence applied to developing organisms may act through the medium of genes (Doggart, 1951).

Prematurity has sometimes been taken as a cause of congenital malformation. With this view in mind, Hess, Mohr and Bartelme (1951) reviewed necropsy reports of 386 premature babies, only two of them had severe malformations, one had an unilateral microphthalmos. The cases under the present review were born at full term and rule out the above possibility.

Both of the cases under review are females, it naturally puts one to question whether the disease is sex linked or not, it cannot be definitely ascertained unless the similar defect reappears in a male child (whether it will at all be advisable to enlarge the family, is, however, a serious question) of the couple. From our knowledge of embryology we know that a male child who has only one "*x*' chromosome inherits a recessive sex-linked disease. The female has two '*x*' chromosomes, the normal one of which dominates over the defective one e.g. in cases of haemophilia. In cases of haemophilia the male children are only affected by the inheritance of a defective '*x*' chromosome from the mother, whereas in cases of the females the normal '*x*' chromosome from the father dominates over the defective one from the mother. If only by a chance both the '*x*' chromosomes are defective the female child also shows the disease. To me this appears to be the cause in my cases. In a detailed field survey Sjoegren *et al* (1949) found that most cases of microphthalmos are sporadic. In seven families males were only affected and in two families only females were affected.

I have already mentioned in the history that none of my patients are idiots, but certainly Case 1 is mentally deficient. According to Roberts (1939), 50 per cent of the cases of microphthalmos and anophthalmos are mentally deficient. In a pedigree survey by him recessive sex-linkage is evident in cases of microphthalmos. But Sjoegren (*loc. cit.*) contradicted him.

Summary

(1) A report of two cases of congenital microphthalmos occurring in two successive female children of the same parents is presented.

(2) The family history does not show a dominant hereditary ocular disease.

(3) One of the cousins of the patients' father has a congenital saddling of the bridge of the nose and hyperelongation of the 2nd and 3rd toes of both inferior extremities.

(4) The disorders are evidently due to the effect of some faulty recessive genes.

(5) As both the children are females, evidently both the parents are the carriers of the genes.

(6) A question naturally arises whether this family should be prolonged or immediate sterilisation should be resorted to.

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In memoriam

DR. AGHORE NATH GHOSH

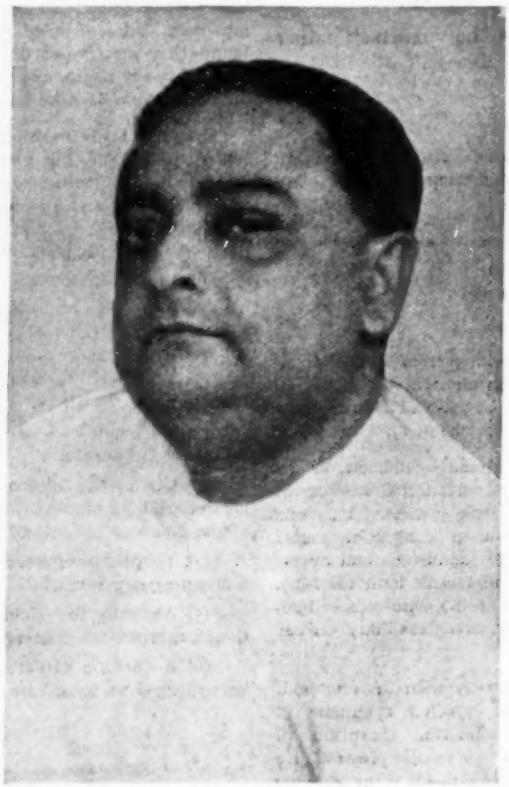
Dr. Aghore Nath Ghosh, the founder Secretary of the Journal of the Indian Medical Association died of acute cardiac infarction about midnight on Monday the 7th December, 1953. He is survived by his widow, four sons and three daughters.

Dr. Ghosh was born in a well-known Kayastha family of 24-Parganas. He graduated in medicine from the Calcutta Medical College in 1913.

Ever from his student days Dr. Ghosh showed extraordinary organising talent and he was connected with all important functions of the institutions to which he was attached. In later life also this trait was displayed by him in all arenas of medical function and activity and on every occasion he received a high appraisal of his abilities.

He was at one time Secretary of the Calcutta Medical Club, organised the medical exhibition in connection with the first All-India Medical Conference held in Calcutta in 1917 and presided over by Dr. Raghabendra Rau of Madras.

During the 5th session of the All-India Medical Conference held in Calcutta in 1928, Dr. A. N. Ghosh was elected a Joint Hony. Secretary and in the next conference at Lahore next year he was re-elected Hony. Secretary joint with Dr. K. S. Ray of Calcutta and Dr. D. D. Sathaye of Bombay. The burden of publishing the official organ of the association which came into being in March 1930 rested on Dr. Ghosh who was made the Secretary-in-charge of the *Indian Medical World* as it was then called. He shouldered the responsibility of publishing the Association journal rechristened in August 1931 as Journal of the Indian Medical Association till 1934.



DR. AGHORE NATH GHOSH
Born 1887 Died 1953

Dr. Ghosh was an ardent member of the Indian Medical Association and attended almost all conferences held under its auspices as a member of the Central Council or the Working Committee or both. His devotion to the cause of the I.M.A. won him the positions of the President, Bengal Provincial Branch and Vice-President of the All-India organisation. At the time of his death he held the pivotal position of Organising Secretary of Seals Sale Campaign of the Bengal Tuberculosis Association.

Dr. Ghosh was unassuming in his manners and there was a dignity of greatness about him. He had an orderly process of thought capable of producing wise decisions. He had also an elegant sense of humour and a peculiar aptitude of making friends with those much junior to him and this possibly kept him young in mind and up to date in his views.

Many do not know of his love for literature and his literary acumen. His inherent aptitude for art found expression in his casual paintings. His own drawing room preserves some of these in oils that are class work from any amateur standard.

It will be indeed difficult to fill the void left by him.

May his soul rest in peace!

JOURNAL OF THE

INDIAN MEDICAL ASSOCIATION

CALCUTTA, JANUARY, 1954

POST-GRADUATE MEDICAL EDUCATION

We are pleased to note that the members of the medical profession in larger numbers are feeling to-day the immediate necessity of expansion of facilities for post-graduate medical education in India. Medical men and administrators concerned have also started to think how our young medical graduates could be prevented from going abroad just to secure post-graduate diplomas. Such practice has already caused a colossal drainage of the national wealth.

Post-graduate medical education should be devised to meet different needs. These are (1) training of consultants and specialists for the hospitals attached to the Medical Colleges (2) training of consultants and specialists for District hospitals and other large hospitals in urban areas (3) the training of specialists for smaller hospitals which would cater to the needs of the rural population, (4) the training of medical officers in public health and medical relief work to enable them to adapt themselves to the revised health policy of promoting measures for the attainment of "positive health", and (5) the training of general practitioners by making available to them "Refresher Courses" at periodic intervals. For categories (1) and (2), medical men and women would naturally need a post-graduate qualification and practical experience in the speciality concerned. To cut down the drainage of national wealth and for proper utilization of the qualified and trained personnel, it would be a good idea for the appointing authorities to declare that after a certain date, say from 1957, they would prefer to appoint candidates with post-graduate degrees and diplomas of the Indian Universities and with necessary post-graduate training in India or/and abroad. Training arrangements for all the other categories may be made in our Medical Colleges and other full-equipped and well-staffed hospitals.

The different State Governmnents as well as the Government of India also owe it to themselves and to the young aspiring medical men and women who have got the hallmark of the University post-graduate education, to accord them proper appreciation by the utilisation of their services in the various schemes which they have undertaken. It has often been seen that persons with foreign qualifications get a premium at the time of selection of candidates for posts under these agencies. If this state of affairs continues, we are afraid, it will be difficult for our young fellows to be satisfied with local post-graduate diplomas and not proceed to foreign countries for acquisition of titles to get advantage of the facilities of service that obtain here.

Our country and its various hospitals attached to teaching institutions lack neither in clinical materials nor in the type of personnel who can impart training in post-graduate courses of the various branches of science, which we advocate. There had been arrangements for post-graduate diplomas by the different universities in our country. Some of them are rather liberal in encouraging our youngsters to get advantage of these facilities to enable them to start their career in the specialities they adopt. At the same time, there are other universities which are not as liberal in allowing their candidates for these post-graduate diplomas. It is high time that the Inter-University Board which meets annually to devise ways and means for bringing about uniformity in university education, also consider the question of post-graduate medical education in all its bearing on the society and the country at large.

All right thinking persons who feel that post-graduate medical education should develop on proper lines, should set their mind immediately about the utilisation of those who are already in possession of this training. It has also to be considered what further expansion is possible to develop the different branches of medicine, surgery, midwifery and the allied branches of clinical and pre-clinical medicine with a clear picture of the requirements of our countrty. It has been noticed that the medical colleges that have recently grown up in our country find it difficult to man their institutions particularly in the pre-clinical branches of study with properly equipped personnel. We feel that efforts should be concentrated on developing post-graduate medical education of higher type in the pre-clinical subjects, so that it might run on the old lines, remodelled according to the latest development of science, which is ultimately aimed at. The vast clinical materials affording scope for ample research should not be lost sight of. We are confident that if all the talents in the profession be pooled together in the different regions, we could evolve effective schemes for the proper fulfilment of our ideal for having the right type of post-graduate medical education. For development of studies in tropical medicine and other epidemiological factors, we think that the members of the medical profession from the West and other countries of the East can utilise the resources of this country.

We are aware and gratified to note that every university in India and its attached medical colleges have made commendable progress not only in under-graduate education but also post-graduate education. What is needed to-day is their expansion so that a larger body of our young members of the profession can utilise the same and contribute to the stability of scientific medicine in this country of ours. There have been several attempts in this direction, in different States in complete collaboration with the university authorities and educational institutions. We are sure that these efforts will get sufficient momentum to evolve the blue prints for the expansion of these studies.

GOOD-BYE

With this issue, I am relinquishing the reins of the office of the Editor of this Journal. My present responsibility since 7th August 1953 as Minister of State in charge of the Medical and Public Health Department of the Government of West Bengal has made it well-nigh impossible for me to devote the time and energy which the Journal demands.

On the untimely demise of Dr. K. S. Ray in the later part of October, 1950, the Working Committee of our Association at its Coimbatore meeting entrusted the charge of the Journal to my humble self. When I took up the onerous duties of its stewardship I had much trepidation in the thought that illustrious persons in the medical profession like the late Sir Nilratan Sarkar and the late Dr. K. S. Ray had held the helm of the Journal with such ability, that I would perhaps prove a misfit for the job and would become their unworthy successor in office. I started work in right earnest after my return from tour of southern India on 1st November, 1950. I have thus completed a little over three years in this office. Whether I have succeeded or failed in piloting the Journal is for the readers to decide.

I take this opportunity to thank the members of the Working Committee, the Central Council and of the Association for their constructive criticisms and sound and helpful suggestions. I felt all through that my difficulties were shared by so many well-wishers of the Association and of my humble self. I must confess that perhaps I could not fulfil even the modest expectation of the readers of this Journal and of the members of the Association but I can assure all that with the resources placed at my disposal and subject to my own limitations, I did my humble best for serving the profession in general and the Association in particular through the medium of this accredited mouthpiece of our national association.

I will fail in my duty if I do not place on record my gratefulness to the several colleagues of mine who have assisted me during this period as Assistant Editors and Secretaries of the Journal and I must say that I have nothing but unqualified praise and admiration for their unstinted support and valued co-operation in shaping the Journal during this period.

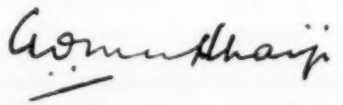
I have also a few words to say about the co-operative and loyal spirit displayed by the members of the staff of all denomination in their day to day discharge of duties entrusted to them. Without their solid co-operation it would have been impossible for me to bring the Journal to its present level. I am also grateful to the numerous learned contributors, Indian as well as foreign, who have enriched the pages of this Journal with valuable contributions. I hope they will continue to take abiding interest in this Journal as their own and enrich its pages with their observations.

I am bidding good-bye to my colleagues, the staff, the office-bearers of the Association and the members in general after serving them all these years, due to my undertaking other kind of responsibility in serving the people in another sphere. I realise how difficult it is to snatch myself away from the field of medical journalism which, to be frank, I have practically adopted since 1928. It may be that due to my official pressure of work in the Government I may not find time to be present as often as I used to in the Journal office and in the meetings of the Working Committee, but I assure all concerned that my thoughts will always be with the office-bearers and workers who will run the Journal.

The new responsibility of the Association, viz., "Your Health," the popular health journal, meant to cater scientific knowledge to English-knowing people of this vast country was also entrusted to my shoulders. It has just completed two years of its life and if I say that it is gradually stabilising itself amongst the leading journals of this country, I hope I will not be mistaken. This is one of the major steps which the Association has taken to rouse health consciousness amongst the people through its medium. I am also relinquishing the editorship of this periodical.

Lastly, I must mention that I may have failed those who have entrusted the responsibility of conducting this Journal and Your Health as I have like all other human beings my shortcomings which probably stood in the way. I am grateful for the indulgence shown to me from various quarters by condoning all the shortcomings of mine. Not infrequently a time comes when one has to part company but I am leaving with a very heavy heart the responsibility of conducting this great journal of ours in my desire to serve the larger interest of the community in another sphere. I pray to the Almighty and all my well-wishers that I may be endowed with the spirit of service to serve the people and the profession. I sincerely crave their goodwill and blessings in my daily work. May the Journal and the Association prosper from day to day and all connected with it also share the same.

Good luck and good-bye to all the readers of the Journal and to my colleagues and associates of all categories in the Journal office.



CURRENT MEDICAL LITERATURE

Oral Hexamethonium in Therapy of Hypertension

Moyer and others (*Am. J. M. Sc.*, **225**: 379, 1953) give in the following lines the summary of their observations on the treatment of 58 patients with hypertension with hexamethonium chloride administered orally: The patients in this study have been treated as outpatients and followed from 4 to 16 months following the induction of therapy. The conditions of patient care have closely paralleled those which are met in a general office practice. Therefore, the results obtained in the present study should closely parallel those obtained in a general office practice provided that the therapist understands the pharmacodynamics of the drug and pays strict attention to the regulation (titration procedure) of a dosage schedule which is an individual problem in each patient. There is no set dose and the dose must be titrated in each patient in order to establish maximum blood pressure regulation. If this is not done, excessive hypotension and serious complications may result.

Hexamethonium chloride when administered orally is an effective agent for reducing the blood pressure. Of 58 patients treated, all but 11 responded with a significant (mean blood pressure decreased more than 20 mm. Hg.) reduction in blood pressure and in about one-half of the patients the upright blood pressure returned to normal limits. The amount of drug required was only slightly greater in the patients with diastolic blood pressures above 140 mm. Hg. as compared to those with pressures less than 120 but more than 100. No difference could be detected between the unresponders and those who responded except that patients with severe hypertension complicated by cardiac failure and moderate to marked renal disease seemed to be particularly resistant to therapy.

Cerebrovascular disease and heart disease (cardiac failure, angina pectoris) seem to be particularly benefited by a reduction in blood pressure with hexamethonium. The renal vessels dilate and maintain renal blood flow and glomerular filtration rate about equal to the control observations in most instances. Damaged kidneys respond in essentially the same way that normal ones do. Therefore, impaired renal function (even if uraemia is present) is not a contraindication to hypotensive therapy. However, in the presence of renal damage, glomerular filtration is critical and small changes may precipitate frank and progressive renal failure. This demands that in the presence of moderate to marked impairment of renal function, reduction in blood pressure must be undertaken with extreme caution and with constant evaluation of renal excretory function. Any tendency toward an increase in blood urea nitrogen is a contraindication to further reduction in blood pressure. If close supervision and repeated evaluation of the blood urea nitrogen is not feasible, then hypotensive drug therapy with hexamethonium is definitely contraindicated.

The combined administration of 1-hydrazinophthalazine (Apresoline) and hexamethonium further improved the blood pressure regulation in 11 of 18 patients in whom adequate control was not obtained with hexamethonium alone. Apresoline is indicated as an adjunctive therapeutic agent in those patients who do not obtain adequate reduction in blood pressure to hexamethonium alone.

Hexamethonium chloride was superior to other orally active hypotensive agents used in the same clinic under similar circumstances. Dibenzyline produced somewhat comparable results initially but proved to be inferior to hexamethonium as a long term therapeutic agent. This was due largely to the inability for this drug to block off the sympathetic innervation to the heart resulting in reflex tachycardia following blood pressure reduction. The tachycardia was particularly marked in the upright position.

The following routine in using the medicine may be of help to the practitioner:

The initial dose of hexamethonium was 250 mg. given orally 4 times per day, before each meal and at bedtime. This was gradually increased in a stepwise fashion until an adequate response was obtained or until side reactions forced discontinuance of the drug. The morning and evening doses of the drug were increased first. The midday and night doses were next increased. It was felt that this routine maintained as constant a blood concentration of hexamethonium as possible if the dosage schedule was to remain practical for long term therapeutic purposes. Mealtime was a good reminder to the patients to take their medicine. In addition, the taking of the medication along with food was found to decrease the rapidity of absorption and thus maintained a more constant hypotensive response. Whether or not the drug was taken along with food, it was found highly essential that the drug be taken with the same relationship to meals from day to day if the blood pressure was to be well regulated. For example, syncope due to excessive hypotension was frequently observed if the drug was taken on an empty stomach after the patient had previously been taking it along with his meals. During the titration period, one week was usually allowed before changes in the dosage schedule were made, unless the patient was in the hospital. In addition to the observations on blood pressure, clinical manifestations of excessive hypotension such as dizziness on standing and weakness were taken into consideration when regulating the dosage schedule.

Isoniazid in Pulmonary Tuberculosis

The second report of the Medical Research Council's Tuberculosis Chemotherapy Trials Committee on isoniazid in the treatment of pulmonary tuberculosis (*Brit. M. J.*, **1**: 521, 1953) is based on the findings in 364 patients after three months' treatment. Three forms of treatment were used: 142 patients were treated with streptomycin (1 g. daily) and isoniazid (100 mg. twice daily); 102 with streptomycin (1 g daily) and p-aminosalicylic acid (5 g. four times daily); and 120 with isoniazid (100 mg. twice daily) alone. The criteria for acceptance of a patient for inclusion in the trial were as follows: (1) Tubercle bacilli had to be demonstrated. (2) The tubercle bacilli could not be streptomycin-resistant or p-aminosalicylic acid-resistant. (3) The patient could not have had more than 15 g. of streptomycin and/or 300 g. of p-aminosalicylic acid within the previous three months, and not more than 3 g. of isoniazid at any time. (4) The patient could not be undergoing pneumoperitoneum nor have any collapse therapy for the lung requiring treatment. Patients so selected were divided into three groups: group 1, patients with acute rapidly progressive disease of recent origin (excluding those with bilateral disease who were between the ages of 15 and 30); group 2, patients with other forms suitable for chemotherapy; and group 3, those with a chronic disease considered unlikely to respond to chemotherapy.

The findings at the end of three months were as follows: The general condition of the majority of patients had im-

proved, and the difference in the three groups in this respect was small. The average gains in weight were 13 lb. (5·9 kg.) for those who were given streptomycin and isoniazid, 6 lb. (2·7 kg.) for those who had streptomycin and p-aminosalicylic acid, and 13 lb. for those given isoniazid alone. Temperatures of febrile patients fell to normal in 82 per cent of those receiving streptomycin and isoniazid, in 76 per cent of those receiving streptomycin and p-aminosalicylic acid, and in 68 per cent of those receiving isoniazid. In patients with sedimentation rates of 21 or more before treatment, the rate fell to 10 or less in 45 per cent of those receiving streptomycin and isoniazid, 21 per cent of those receiving streptomycin and p-aminosalicylic acid, and in 25 per cent of those receiving isoniazid. Two plus or three plus radiographic improvement was seen in 38 per cent of those receiving streptomycin and isoniazid, in 31 per cent of those receiving streptomycin and p-aminosalicylic acid, and in 23 per cent of those receiving isoniazid. The proportions of patients bacteriologically negative, both on direct examination and on culture, at a single examination at three months were 67 per cent of those receiving streptomycin and isoniazid, 55 per cent of those receiving streptomycin and p-aminosalicylic acid, and 37 per cent of those receiving isoniazid. Bacillary resistance to isoniazid was found in 62 per cent of culture-positive isoniazid-treated patients at the end of three months, compared with only 13 per cent of similar streptomycin-isoniazid patients. Bacillary resistance to streptomycin was found in 11 per cent of the streptomycin-isoniazid patients. No serious toxic effects from isoniazid were noted in any of the patients.

The committee's main conclusions are as follows: "None of the three drugs, isoniazid, streptomycin, or P.A.S., should be used by itself, nor should two of them be used in combination for a patient whose organisms are already resistant to one of the pair. . . . . The Committee has obtained convincing evidence that streptomycin 1 g. daily plus isoniazid 100 mg. twice a day is a highly effective combination of drugs when used for a period of three months in the treatment of pulmonary tuberculosis. On none of the clinical or bacteriological criteria was the combination inferior to streptomycin 1 g. daily plus P.A.S. 5 g. four times a day over this period; in two respects—namely, in lowering the sedimentation rate and in fostering weight gain—it was decidedly superior. Nevertheless, the slender evidence on bacterial resistance which is available after four months' treatment is not entirely reassuring. In view of the short period of observation it is certainly not yet possible to assess the final place of streptomycin plus isoniazid in the chemotherapy of pulmonary tuberculosis.—*J.A.M.A.*, 152: 548, 1953.

Hyperventilation Syndrome

Lewis (*Ann. Int. Med.*, 38: 918, 1953) gives in the following lines the summary of his observations on hyperventilation syndrome.

Contrary to prevalent opinion, this study revealed that hyperventilation syndromes: 1. Occurred relatively frequently. 2. Pursued a chronic, fluctuating course more often than one featuring brief, explosive attacks with asymptomatic intervals. 3. Presented atypical clinical pictures, with the respiratory component generally masked by prominent symptoms referable elsewhere. 4. Arose from either organic or psychogenic mechanisms, or combinations of both.

Regardless of the nature of the basic mechanism, sustained overbreathing is the primary link in this pathophysiologic chain of events. Widespread biochemical, neurovascular and neuromuscular changes are thus induced. The resultant symptoms and signs suggest neurologic, musculoskeletal, respiratory, cardiovascular, gastrointestinal and/or psychiatric disorders.

The case summaries illustrate some of the atypical clinical pictures and the variable guises under which the hyperventilation syndrome appeared. Peripheral paresthesiasis were the most consistent symptoms, and disordered breathing was the most common sign. As these were seldom prominent features, a high index of suspicion was required to detect the important diagnosttic clues.

An accurate diagnosis is doubly important, and proportionately difficult, when organic disease and psychogenic hyperventilation coexist; this combination probably occurs much more frequently than is now recognized. The pathophysiologic effects of chronic hyperventilation may underlie many of the manifestations of neurocirculatory asthenia, "functional" cardiac and gastrointestinal states, atypical fibromyositis and other myalgias, anxiety-tension reactions and chronic nervous exhaustion.

Voluntary overbreathing will precipitate a typical, acute attack, and rebreathing from a paper bag will terminate it. These combined procedures have both diagnostic and therapeutic value inasmuch as they:

1 Can reproduce the patient's alarming symptoms and dramatically abolish them.

2 Demonstrate the reality and at the same time the psychophysiologic basis of these symptoms.

3. Provide the patient with immediate symptomatic relief and a simple technic for terminating future attacks.

4. Furnish the physician with additional insight into the related personal difficulties.

5. Strengthen the doctor-patient relationship.

6. Set the stage for a national and realistic therapeutic program.

Pure Mitral Insufficiency of Rheumatic Origin in Adults

Movitt (*Ann. Int. Med.* 38: 981, 1953) writes that in the group of 44 autopsied cases of rheumatic heart disease they found four cases of pure and isolated mitral valve incompetence without deformity of any other valve, pericarditis, hypertension, coronary artery disease, syphilis or any other type of cardiac involvement except rheumatic (with the exception of bacterial endocarditis in one instance). All four patients died in congestive heart failure at the ages of 42, 50, 51 and 56, respectively. Thus, all four patients died of no cause other than those secondary to pure mitral valve incompetence.

Modern standard texts and reference works on cardiology, as well as the current literature, create the impression that, in adults, fatalities from heart failure occur but rarely during the stage of pure mitral insufficiency. The evidence here presented tends to show that such an impression is probably incorrect, and that death from this cause may well occur in adults, even in advanced middle life, more frequently than is currently believed.

The diagnostic features of pure and isolated mitral insufficiency are discussed. In passing, a note can be made of the fact that sclerosis of the pulmonary vasculature seen in some patients with mitral stenosis was not observed in our cases of pure mitral insufficiency.

Cardiac Manifestations of Poliomyelitis

Fox and others (*Lancet*, **2**: 323, 1953) from the analysis of the observations on a total of 412 electrocardiograms taken on 189 cases of poliomyelitis write that electrocardiographic abnormalities were found in 32 per cent of the patients. The most consistent abnormality was in the ST-T. The data presented conform, in the main, with those reported by other investigators.

A review of 70 autopsied cases of poliomyelitis revealed interstitial inflammatory reactions in about half of the cases.

Because of the non-specific characteristics of the E.C.G. findings, the diagnosis of myocarditis complicating poliomyelitis remains a clinical problem, in which the electrocardiogram serves as a supplement. The possibility of selective "cardiotropism" by individual strains of the virus is commented upon.

Potassium Depletion from Overuse of Laxatives

Schwartz and Relman (*J. Clin. Invest.*, **32**: 251, 1953) stress on the well known fact that diarrhoea caused by a variety of gastrointestinal disorders may lead to potassium depletion. This paper presents observations on two otherwise healthy women, who, prior to this study, had gradually developed severe potassium depletion and hypokalaemia as the result of chronic diarrhoea induced by overuse of laxatives. Although in each instance there had been a loss of approximately one-third of total normal body potassium, there were no other significant disturbances of water and electrolyte balance and no overt signs of malnutrition. These two subjects thus presented an unusual opportunity to observe the clinical and physiological effects of uncomplicated potassium depletion. Neither of the patients had any overt neuromuscular symptoms or signs, and it was only through the discovery of T-wave changes in routine electrocardiograms that hypokalaemia was discovered. There were no other disturbances of serum electrolytes except for slight elevation of plasma bicarbonate in one patient. Red cell sodium, potassium, and phosphorus concentrations were normal. Renal excretion of potassium was very low. When laxatives were withdrawn and the patients given normal oral intakes of potassium, each retained an amount of potassium roughly equivalent to one-half the total initial body potassium content without significant retention of nitrogen or phosphorus. Changes in total exchangeable potassium were approximately equal to the actual potassium retention. In both instances potassium retention was accompanied by a large but transient retention of sodium. Internal balance calculations indicated that cellular uptake of potassium was approximately equal to the estimated loss of intracellular sodium and that total initial intracellular cation concentration was markedly reduced. Excretion of ammonium was relatively high initially and during correction of the potassium deficit ammonium diminished rapidly without significant change in urine pH or titratable acidity. Ability to concentrate the urine was impaired in both patients prior to treatment, but was restored to normal after correction of the potassium deficit. Clearance studies begun immediately after treatment revealed slight reductions in glomerular and tubular function in the first patient, but severe depression in these functions in the second patient. After correction of the potassium deficit all functions gradually returned to normal. It is suggested that renal dysfunction may account for certain disturbances in water and electrolyte metabolism observed in potassium deficiency.

CURRENT TOPIC

EVOLUTION OF PREVENTIVE MEDICINE

J. AXEL HOJER,

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The "History of Medicine" by Cecilia Mettler stops at 1850. There is no single word in that about public health. Castiglione, in another book on the same subject, gives two charters on public health, one for the years 1850-1900 and another for the years 1900-1950. He points out that the modern trends of medicine are following the essential lines, indicated in the pages of the Greek and Roman classics. I quote the following:

"The State as the supreme defendant of the public and individual health is responsible for the initiation through the agency of its medical functionaries, in the schools, the centres of physical education, measures considered as essential factors in the well-being of the individual and the nation in public works, such as water supplies, sewerage systems, supervision of food supplies, and so on".

In listening to his quotation you may well think, that the builder of the Travancore-Cochin Medical College with its sporting grounds, Dr. C. O. Karunakaran, may well be called a 'classic Greek'.

In fact certain features of public health can be followed back through history. Water supply and sewerage disposal were excellent in the old Sindh and Roman cities. Even in the oldest magic medicine and throughout the centuries there are some features of preventive medicine. But modern public health as an applied science, as an active movement or a crusade, if you like, is really just a hundred years old. Public health is built upon the natural and technical sciences and like these depend on proper measurements. Mortality and vital statistics in my country are some 300 years old —but only since 100 years the general mortality decline started there, as in other countries with better education, as a result of the authorities fighting the epidemic diseases, cholera, dysentery, smallpox, etc. After that public health in all countries has grown stronger by the confluence of one tributary after another, as a steadily growing river. I will dwell shortly on the most important of these contributories.

Besides statistics, sanitation is one of the primary activities. Thanks to clean water supply and sewage disposal systems in the British towns, they got rid of cholera more than 100 years ago. Soon sanitation as a science flourished in Germany and in U.S.A. One of the pioneers of public health in U.S.A., a Boston bookseller, Shattuk, wrote in 1850 "Sanitary professorship should be established in all our colleges and medical schools. It would be useful to all, and particularly to the students in curative medicine". Since then sanitation has been spreading all over the world.

Hygiene as the science of sanitation, is by many looked upon as not interesting or important to the physicians, but only to the engineers. That may be so as far as technical details are concerned, but the principles are highly important to the medical profession. Many problems must be followed collectively. Take the question of habitations. You may have heard of the town in South England, where slums were cleared and the population removed to nice houses in sounder surroundings. But they had to pay a higher house rent, and so they had less money left for food, and their mortality,

already high before, became still higher, and their health deteriorated in the better houses. Or take the primary principle of cleanliness by avoiding faecal matters of human or animal origin. It has been proved by parasitologists and bacteriologists that a number of pathogenic parasites, bacteria and virus live in the intestines of man or animal. We gladly introduce water-closets, but the soil is impoverished and many streams and lakes are polluted. There is as yet no really good general solution to all these difficulties. We are now in a transitional stage of partial cleanliness from faecal matters. I would like to call it the period of polio which is just starting in India. The natural immunity for polio virus, living in the human intestines, is disappearing. Infection and disease are coming later in life to many persons. It may take another generation before we get rid of polio by still better cleanliness, by vaccination or by any other way.

The next tributary of the mighty river of public health, epidemiology, is as old as sanitation. It became well established and flourishing only after the labours of French and German bacteriologists between 1860 and 1880. Thanks to the splendid discoveries of Pasteur, Koch and others continued into the present century, hygiene was called applied bacteriology and later applied microbiology. After the Western countries had got rid of the big epidemics of smallpox, cholera and other so-called tropical diseases, they tried for long to develop the quarantine system to protect themselves against contact with less advanced countries. It is only in the last decade that the World Health Organisation has started the eradication of these epidemic diseases all over the world. By that we have learnt a lot about the spread of infection, about human and animal transmitters, often asymptomatic. Above all, we have learnt better the art of immunisation.

From the beginning of our century the amino acids, the vitamins, the different necessary elements among minerals, etc., have been traced and in part synthesised. The science of nutrition has flourished as has, I think, not yet seen its summit. The general 'geography of hunger' has only recently been brought to light to its full extent. Among all the effects of semi-starvation the lowered resistance to T.B. and other infections is perhaps the most important just now.

The next branch of public health is the baby welfare movement. Conceived in France by an obstetrician, for the breast-fed babies, and by a pediatrician for the orphans in the eighteen nintees, it spread soon to Great Britain and Germany. A general practitioner in New Zealand, Truby King, adopted it for rural areas, by visiting nurses. In Sweden from 1937 it was deliberately built up by the Medical Board as a practical system embracing all babies in the country, with the co-operation of midwives, public health nurses, general practitioners, and pediatricians. It was incorporated among the responsibilities of the county councils in every Taluk, with their central hospital with obstetric and pediatric wards under specialised chiefs. Every child is in this way followed and protected from prenatal days, with blood tests in every mother for timely detection of syphilis and Rh, and early vaccination of the baby against T.B. and smallpox and regular advice by nurses and doctors on all health questions, family planning included. Sweden's infant mortality is now the lowest in the world, but Norway, New Zealand, several states in U.S.A. and London are following close. What is not yet solved is the question of prevention of prematurity in babies. Here the science of prevention has not yet arrived at final conclusions. The Americans have in many places built a very active service for the care of premature babies, collecting them by ambulance cars the very first day of their birth, feeding them in central institutions with amino acids, minerals, oxygen, vitamins, hormones, etc., under aseptic light and air conditioning. Some authors, however, have recently expressed doubts, if the blindness of a number of these children, through pathological processes at the back pole of the eye (retrolental fibroplasia) may not be due to a too energetic treatment, when the oxygen pressure is suddenly changing. Such mistakes are not uncommon in the medical history and are sailing marks on the way to better practices.

The baby welfare movement clearly demonstrated two principles, firstly the value of a personal following up by medical personnel, including physicians and nurses, at medical centres and in the homes, and secondly the introduction of better habits in baby life not by general preaching but by giving to the mothers good advice when they needed it most. These advantages are made available very cheap, at a cost of only a few rupees per baby annually. The baby welfare movement of 1900-1950 thus has been the model for the system of the continued medical control of the individual, with personal health education, building new and better health habits, first for pre-school children and then for school children. 70 per cent of the pre-school children of 2-6 years in Sweden are now looked after in special hours by the same machinery. Then follow the school children. Most countries have some form of School Health Service. The ideal of a full preventive and curative school health service by general practitioners, pediatricians and all kinds of specialists, is not yet fully built up in many places.

In the meantime, the technical progress of the internal medicine has laid the basis for similar system of medical care even for grown ups. First started by the American Life Insurance Companies some 30 years ago and soon adopted by industries, it is only now taking shape in different countries for the people in general. One category, the mothers, have been cared for in connection with the baby welfare work. For young people in industry there is in many countries a special regular medical control of industries detrimental to the health. Such a control is often regulated by law. There are already special international conventions on this point built up by the International Labour Organisation.

The same scheme of regular medical examinations is developing from the practice of different medical specialities. Specialist physicians in many countries have asked for screening procedures in healthy people to detect early cases of different kinds of diseases, like high blood pressure, diabetes, heart disease, rheumatoid arthritis, syphilis, yaws, tuberculosis, malignant diseases, etc. Most notable of these are the cancer campaign in the U.S.A. and the chest screening for detecting tuberculosis all the world over. The ieda of an overall screening procedure is not far away. Such a scheme requires certain arrangements. Some Americans have conducted experiments, to find out how much ill-health could be detected by laboratory technique without the personal interference of the physician. Such experiments may have been useful to show that physicians are necessary, and that the technician is only of limited help. Another system which appears more sound and is adopted for experimental work and practice in Sweden as well as in most parts of the U.S.A., is to make all laboratory technicians and all specialists helpers of the general family physician, who has to make the

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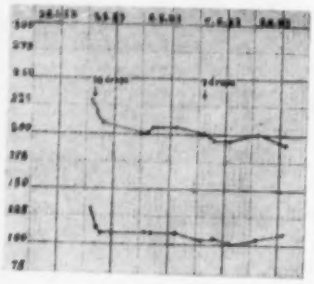

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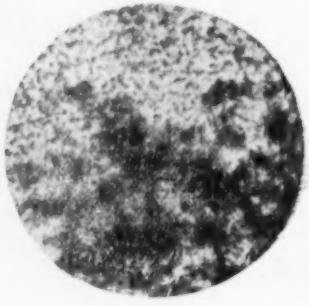

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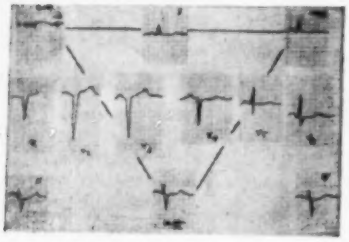

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final conclusions and give personal advice. Only through such a system we have a chance to change old habits and build a better health practice. Such a system requires help from public authorities, built as it is on the family district physician, the public health nurse and a system of laboratories, in connection with smaller and bigger hospitals. The hospitals are thus growing into health centres, the whole medical profession looking out for early diagnosis, and the medical service built to serve in the first place this purpose instead of stepping in only when the disease is in full progress, leaving the patients, even if cured, often disabled. Then there should not be one Director General for Public Health administration and one Surgeon General for the administration of hospitals but one coordinating chief with the confidence and strong backing by Government without any political interference. Public health and medical care are or ought to be the common interest of all parties.

Before I enter more upon administration let me dwell a little more on education. Public health education is becoming more and more important and is of primary interest for physicians and nurses. What we have learnt during the last few decades about mental hygiene, neuroses, individual behaviour in family, industry and society, and about creating healthy habits, makes it clear that the children in institutions and schools must be made to benefit by these. The education of the teachers and also of the parents in these matters is therefore highly important. Public health education must be introduced in and should influence all popular movements—of sports, of sobriety, of education, of religion.

It has also become clear that a strong public health administration of capable men and women is necessary to organize a modern public health in a country. If there is not such an administration there is too much waste, too much frustration. If this big machinery should function properly, there must be clever, enlightened and ardent medical people in the lead. That costs money. Are the Governments ready to give that? Well, the question of economy does not seem so difficult. Even lay men can see the close connection between health, cleanliness, adequate nutrition and education, full employment and prosperity.

Here comes the conclusive point. If we are really looking to the happiness of all people, and no political leader dares to-day to give a negative answer to this, then the ideal of promoting full health for all is inevitable. It is then a very bad economy not to start at once by organizing an effective public health department. Especially is this the time for a country in the organisational period, with scarcity of medical personnel and a strained economy.

This point is further emphasised by the high cost of modern curative medical treatment. In Sweden the maintenance of a hospital bed costs the hospital authorities some 15 to 50 rupees a day, in U.S.A. many times more. It is quite clear that even from considerations of economy it is cheaper to prevent a disease, wherever possible, than to cure it after it has developed.

A word about the medical profession and this new development which although a 100 years old is just now establishing itself on the strength of facts. Apparently things may seem clear, but practically there are many difficulties. The World Health Organisation is taking the lead and it is really important that the whole medical profession should help. We have learned from the U.S.A. the necessity of team work, especially in public health. There are many in the team, physicians as public health men, medical specialists and general practitioners, sanitary engineers, nurses, midwives, hospital and district care people, dentists with auxiliary personnel, and technicians of all sorts, teachers, heredity scientists for eugenics, architects for housing and planning, veterinary men for the control of animal foods and animal health, social workers for the prevention of alcoholism and many other evils. All are needed in a complete public health scheme. Intelligent laymen understand the situation. Physicians are sometimes reluctant, thinking of the good old magic days and the personal relationship between doctor and patient. But isn't it a little awkward to retain diseases just to be sure to keep this relationship? There are diseases enough which we cannot as yet conquer, like the chronic metabolic diseases, the malignant growths, etc. But it is always better to treat them in an early period. Think also of peptic ulcer, appendicitis, the heart-renal complex, the psychoneurosis, the sclerosis of the blood vessels, the gynaecological disorders, etc. In all there is ample place for prophylactic measures in an early stage. The new practice of gerontology requires an increasing number of physicians. Medical practice will change, of course, just as pediatrics has changed in Western countries, where nearly all babies are first class, but where nevertheless, more and more pediatricians are required. Every specialist has to look for prevention in his speciality; ophthalmologists for the prevention of blindness and troubles of vision, E.N.T. specialists for prevention of deafness and troubles in hearing and speech, the dermatologist for preventing acute and chronic dermatitis, and so on and so forth, all specialists helping to evaluate the symptoms for an early diagnosis.

It is heartening that International Labour Organisation is proposing a new convention on social security covering also preventive medicine, but there is very little use for legislation, if the medical profession is not helping. In France, where every citizen by law is entitled to a certain number of health examinations, I was told a year ago that this is mostly on the paper, because of lack of co-operation of the physicians and on account of administrative inefficiency. Even the British medical reform has not given much attention to public health side and provides primarily for curative medicine., This in these days is impossible to do economically, as has been already demonstrated by experience. It is clear, that the administrative set up or machinery, the incorporation of voluntary agencies, private practitioners, etc., will change from state to state, decade to decade, with the general political, social and economic pattern. But the fundamental trends are just the same in the U.S.A., the Western European countries and in the Soviet Union block. Public health and preventive medicine constitute modern medicine. If you study the different aspects of medicine you will meet the general trends everywhere—in school health, in industrial health, in community health projects, etc. So it is highly necessary that our new doctors are educated to play their part in modern medicine, where the patient is treated *not only* as an individual *but also* as a member of a family, a group, a community.

A young friend of mine, Dr. Milton Roemer, former associate in Medical Care Administration, United States Public Health Service, now in the World Health Organisation, wrote as follows in 1946:

"Modern medicine requires the co-operation of many, even public opinion; we may call it preventive medicine or

public health or social medicine or human ecology. But the leadership is a challenge to the physicians in all parts of the country, in the centre, the cities and the villages".

Therefore my conclusions are these:

Let us do away with quacks, whatever they may call themselves, by a restrictive legislation for the security of the public. Let us incorporate the best in the old indigenous systems and continue to build up our curative medicine, doing away with the diseases as far as the technical possibilities admit. Let us look on health as our happiness and on preventable diseases as a reproach. If we like to take the lead, let us not hide in the bushes. The public health ideas will make their way with the force of facts. If we co-operate it will be a success. If we do not co-operate it will be something of a mess. The challenge is very strong. We will also profit ourselves, but of course there is no place for exhorbitant fees. Greedy persons should not join the ranks of modern medicine. They will be a nuisance. Somebody may tell me "This is more a vision than a reality, more of the thoughts of the leaders in public health than of the medical practitioners. Are there no differences of views between World Health Organisation and the World Medical Association? There certainly are. But my optimism is not unfounded. India which has to adopt the most effective and economical policy, cannot fail to follow what has proved its value, and is pointed out by leading medical men in most countries as the correct line for the medical profession. Coming here to introduce and foster this development, not by myself but through my students, I find this movement already in full swing, in all India, and especially in the Travancore-Cochin State. So I am not alone in the conviction that my philosophy as a physician is also the proper philosophy of modern medicine. To South India and especially to Travancore-Cochin as a pioneer in many respects, is applicable, what Dr. Krumbheer of the U.S.A. has said: "the faith in the validity of scientific systems and in the utility of hygienic measures, the sense of security in the work of the physician, which continues to penetrate further into localities distant from cultural centres, and which is creating a new individual and social life in our time, are the factors to which in the last analysis must be attributed the practical success, that has been obtained."

NOTES AND NEWS

WORLD DIRECTORY OF MEDICAL SCHOOLS

The World Health Organization has recently announced the publication of the first "World Directory of Medical Schools" which lists the more than 500 medical teaching institutions now open throughout the world, in 84 countries and territories, and gives essential data about each of these schools. The information gathered by WHO for this bilingual, English and French publication includes: date of foundation, administration, academic year, conditions of admission, teaching staff, total enrolment, annual admissions, language of instruction, duration of studies, degrees obtainable, annual number of graduates and tuition fees. The International Association of Universities (and its executive organ, the International Universities Bureau) assisted the World Health Organization in compiling the Directory, which is considered to meet a long-felt need and lay the foundation for more complete and more exact succeeding editions.—U. N. Weekly Newsletter, 4-11-53.

HOUSING AND COMMUNITY DEVELOPMENT

Arrangements for convening the first U.N.-sponsored Regional Seminar on Housing and Community Improvement in New Delhi in January 1954 and for U.N. participation in the Government of India's International Exhibition on Low-Cost Housing were confirmed recently with the signing at U.N. Headquarters of an agreement between the United Nations and the Government of India.

In signing the agreement for the Government of India, Rajeshwar Dayal, India's Permanent Representative to the United Nations, characterized the two projects as "very useful schemes" in focussing attention on housing problems and community improvement.

STATISTICS IN PUBLIC HEALTH WORK

"Vital and health statistics are essential tools for the formulation and administration of public health programmes" and should accordingly be developed in every country. This basic principle was re-affirmed at the first International Conference of National Committees on Vital and Health Statistics, convened under the auspices of the World Health Organization in close collaboration with the United Nations. The conference took place in London, from 12 to 17 October at the General Register Office, Somerset House, and was attended by 28 delegations from WHO Member and Associate Member States. Representatives of the International Labour Office and of the International Statistical Institute were also present.

The conference noted with satisfaction the important activity of the National Committees on Vital and Health Statistics created in 30 countries, one of whose objectives is "to relate the activities and functions of diverse agencies or organizations that produce statistics, so that they work as a co-ordinated whole, avoiding both wasteful overlapping of effort and important gaps in essential parts of statistical data."

Accuracy in the diagnoses given by physicians in medical certificates and particularly certificates of cause of death, which constitute the basis of health statistics is of course of fundamental importance, and the Conference recommended that this requirement be kept constantly before the attention of medical practitioners.

Professional medical secrecy, as defined in various countries by legislation or tradition can also be adequately safeguarded, the Conference found, after discussing various devices presently employed to satisfy secrecy requirements.

WORLD CONFERENCE ON MEDICAL EDUCATION

The First World Conference on Medical Education, which took place in London from 22 to 29 August 1953, was sponsored by the World Medical Association in collaboration with the World Health Organization, the Council for International Organizations of Medical Sciences, and the International Association of Universities.

Aproximately 600 participants from more than fifty countries gathered to discuss the many problems of undergraduate medical education, to compare notes and exchange experience on how to adapt the teaching and training of medical students to the needs of a rapidly changing world.

Notwithstanding the same medical ideals in all countries, it was also realized that there is no universal or uniform answer to the medical educational problems of all countries. In his welcome address, Mr. M. G. Candau, Director-General

of the World Health Organization, said: "We in the WHO realize that one of the best ways to help countries improve their health services is to assist them in forming a highly competent body of professional health workers, among whom the members of the medical profession naturally occupy a leading and undoubtedly responsible position. The mere importation of such health workers is no more than a short-term and partial solution of the problem. While the physician must acquire the tools which modern science provides, he must also be prepared to work within the cultural and sociological framework of the country which needs his services. In the end, every country must develop its own medical education facilities, adapting the patterns and experience of others to its own needs, and not merely copying them."

After the initial plenary session, the Conference dealt with the following problems in four different sections, each presided over by a Conference Vice-President.

Section A: Requirements for entry into medical schools—Dr. Victor Johnson, Mayo Foundation, U.S.A.;

Section B: Aims and content of the medical curriculum —Sir A. L. Mudaliar, Vice-Chancellor of the University of Madras, India;

Section C: Techniques and methods of medical education—Dr. A. Hurtado, San Marcos University, Lima, Peru;

Section D: Preventive and social medicine—Professor A. Stampar, University of Zagreb, Yugoslavia.

The question as to whether and how medical students should be selected gave rise to illuminating controversies, with some advocating certain procedures with as much conviction as others were ready to oppose them. The value of aptitude tests and personal interviews was seriously challenged. There was practically consensus of opinion on the necessity of measures to prevent the undergraduate curriculum from becoming too overloaded by a continuous addition of new specialities, and the opinion seemed to prevail that the medical graduate should have acquired in the course of his undergraduate training a thorough knowledge of the fundamental principles of medicine and sufficient factual knowledge and training to enable him to continue his (postgraduate) training with equal ease either in the direction of general medical practice or in any of the medical specialities.

The particular needs of undergraduates in the underdeveloped countries were stressed by Dr. Edward Grzegorzewski, Director of the Division of Education and Training Services of WHO. He called attention to the fact that "the role of practically any doctor in a less-developed community is not an exclusively technico-medical one. By virtue of his education, of his social position, and his individual approach to persons and problems, he is bound to become one of the few cultural leaders of the community. In half the world, whether he wants it or not, he has to assume some functions of leadership. . . . He should, therefore, be prepared for this role of leadership during his studies. . . . He must receive this preparation in his medical school by example, by orientation, by the spirit of the school and its leaders."

Throughout all the discussions there was an obvious awareness of the need to pay particular attention to the preventive and social aspects of medicine in the teaching of undergraduates. These trends were, naturally, particularly emphasized in the section dealing specifically with preventive and social medicine.—*Chronicle of the WHO*

MEDICAL POSTGRADUATE COURSES OF INSTRUCTION

The Royal Institute of Public Health and Hygiene conducts a recognized Course of Instruction (for postgraduate medical men and women only) for the Certificate in Public Health Examination of the Conjoint Board of the Royal College of Physicians of London and the Royal College of Surgeons of England. This leads to Courses for the Diploma in Public Health and for the Diploma in Industrial Health. Students are also prepared for the Diploma in Industrial Health examination of the Society of Apothecaries of London. The next Course of Instruction for the Certificate in Public Health will commence on the 19th March, 1954.

Further information, entry forms and prospectuses may be obtained from the Secretary of the Institute, 28, Portland Place, London, W.1, or from the Acting Dean, at 23, Queen Square, London, W.C.1.

INTERNATIONAL CONGRESS ON DISEASES OF THE CHEST

The Third International Congress on Diseases of the Chest will be held in Barcelona, Spain, on October 4-8, 1954.

RAPTAKOS FELLOWSHIPS

The Raptakos Medical Research Board Fellowships for the year 1954 have been awarded to the following candidates for research work in subjects mentioned:

1. Mrs. Shanta S. Rao, Haffkine Institute, Parel, Bombay—Isolation and the study of the biological properties of the therapeutically important constituents of cobra and Russell's viper venom.

2 Dr. Shyam Kumar Vaish, Indian Veterinary Research Institute, Izatnagar—Diet and its relation to blood and tissue electrolytes.

3 Miss D. Royal, The Prince of Wales Medical College, Patna—Role of Spinal anaesthesia in the treatment of eclampsia and pre-eclampsia.

4 B. S. Narsinga Rao, Nutrition Research Laboratories, Coonoor—Nutritional significance of tryptic inhibitors with special reference to duck egg white anti-trypsin.

5 V. V. Patwardhan, Indian Cancer Research Centre, Parel Bombay—Determination of normal levels of excretion of steroid hormones in men, women and children of certain age groups in the city of Bombay.

BOMBAY OBSTETRIC AND GYNAECOLOGICAL SOCIETY

The 6th intensive Refresher Course in obstetrics and gynaecology will be arranged by the Bombay Obstetric and Gynaecological Society between 15th and 20th March 1954.

A nominal fee of Rs. 15/- each is to be paid in advance for registration. The candidates will have to make their own arrangements for boarding and lodging.

ALL-INDIA OPHTHALMOLOGICAL CONFERENCE

The 15th All-India Ophthalmological Conference will be held in Nagpur on January 29-31, 1954.

The following is a provisional programme:

Friday, the 29th January 1954—10-30 a.m.—Welcome Address, Inaugural Address, Presidential Address, etc. 2 p.m. —Scientific Session, Photo. 8 p.m.—Society Dinner.

Saturday, the 30th January 1954—8-30 a.m.—Scientific Session 2 p.m.—Trip to Wardha.

Sunday, the 31st January 1954—9-30 a.m.—Scientific Session. 2-30 p.m.—Open Conference. 6 p.m.—Tea, Variety Entertainment.

CORRESPONDENCE

The Editor is not responsible for any views expressed by the contributors

A NEW AUSCULTATORY SIGN IN PARALYTIC ILEUS

SIR,—Apart from the classical signs of paralytic ileus, I have often been struck by a sign which is more or less regularly present in all the cases of established ileus. I have been observing it for a long time. I am used to laying a lot of emphasis on it. Recently going through the literature on the subject I was surprised to find no reference to it whatsoever. And hence I venture to publish it.

Absolute constipation of flatus and faeces with vomiting and distension, and absence of auscultatory intestinal gurgling are considered the classical signs of this malady. To this auscultatory finding I wish to add a few more observations. In cases of developing paralytic ileus as soon as the absence of intestinal sounds get established heart sounds begin to be clearly audible in the abdomen. In the graveyard silence of the abdomen this beating is so striking that once heard it can never be forgotten. Sometimes breath sounds are also equally clearly audible in the abdomen. As soon as these patients start recovering, the intestinal movements reappear and with it the clearly audible heart sounds in abdomen also disappear.

Sometimes when in doubt as to whether the condition is of paralytic ileus or mere meteorism, I have used this sign with a lot of success. If the intestinal sounds are not heard and yet the heart sounds have not appeared in the abdomen, I take it as a case of meteorism. Once the heart sounds appear I take it as a case of established ileus.

The onset, and disappearance of these sounds are so dramatic and their presence so easy to detect that I have found this sign more useful than the sign of absence of intestinal sounds which are so often difficult to determine conclusively even after prologed auscultation.

I have not been able to determine the physical phenomenon behind the sign. May be, the abdomen with atonic intestines full of gas and fluid acts as a resonating cavity to the sounds produced above the diaphram. I am, etc.,

M. D. PATEL, M.S.,

Baroda,
8-9-1953

BROTHERHOOD AMONGST MEMBERS OF THE MEDICAL PROFESSION

SIR,—I took my daughter to a physician who is attached to a private company's hospital in the district of Burdwan, West Bengal, for consultation. The doctor knew me to be a medical practitioner. In spite of this he did not hesitate to accept his consultation fee.

Further I was disappointed when he asked me to take the girl to Calcutta for further consultation without giving me at the same time his examination report or opinion.

My idea of publishing this fact is not to attack the doctor concerned but to remind my fellow brothers of the rules framed and laid down by the Provincial Medical Council, in which it has been clearly mentioned that "A medical practitioner should give free medical aid to a professional brother, his wife and children and to a medical student".

The idea of framing this rule is to promote feeling of brotherhood amongst the medical profession which, I think, every one should strictly follow. I am, etc.,

Madhupur
16-11-1953

M. BISWAS, M.B.B.S.

SUDDEN DEATHS

SIR,—During the last three or four years sudden deaths are increasing in number. In the last two weeks of this month six persons have died suddenly, one died after having a bath—two after taking food, one whilst going to the lavatory and one died as he was going to sleep. These deaths have caused anxiety and fear in the minds of the people as no one knows the cause of these sudden deaths. The number of cases suffering from coronary thrombosis have also increased in these years.

As is usually the case there is a lot of speculation about these deaths—not knowing from any authoritative source the cause of the thrombosis and heart failures. The authorities have taken no steps to investigate the cases taking the deaths for granted as natural. No cause can be found out without an autopsy of the dead persons, which is never undertaken for sentimental reason. It is only in criminal cases that postmortem, is legally done. To yield to sentiment deprives the medical profession of valuable research work, to increase our medical knowledge we have to wait to import such knowledge from Western countries and this is not always possible in every case, wherein the cause of death is not obvious. For lack of opportunity of doing autopsy and research work the doctors as well as laymen fall back on their own imagination which sometimes runs wild.

It is heard in many places when people talk about sudden deaths among old and young, rich and poor, hard working and easy going that these are due to poor nutritive food, bad cereals irritating the membrane of the alimentary canal etc. But when it is considered that sudden deaths occur mostly in men and in very few women, the above view point seems to be ridiculous. It is not known whether it is the experience of other doctors in this province as well as in others that some persons come for advice in sexual matters and their chief complaint is that they have lost their potency and want treatment to recover it. There are others who take the sexual tonics advertised in the papers—such as Okasa etc. and many go to the compounders and quacks as these are supposed to be experts in the supply of such tonics. If one is curious enough and make enquiries, one will find that a majority of these persons were addicts to masturbation which was the cause of impotency and the doctors who did not encourage them to take treatment to correct the defect were ignoramuses. The tonics and injections taken by these persons play an important part in the resulting disaster, the other factors being wrong diagnosis and treatment in the cases of heart trouble Morphine and various preparations of opium alkaloids are used very frequently now as if every case is one of thrombosis.

There is no fault of the doctors. In our ignorance we treat many cases of myocarditis due to different anaemias or due to other causes, either by heart stimulant or depressant often with fatal result. It is high time that the doctors and the public make a determined demand for autopsy, research and more scientific treatment.

I would also request doctors in the country to express their views on this subject. I am, etc.,

Jubbulpore,
29-11-53.

GEORGE DA SILVA.

SUPPLEMENT

Journal of the Indian Medical Association

VOL. XXIII, No. 4 CALCUTTA JANUARY, 1954

ASSOCIATION NOTES

PROCEEDINGS OF THE 48TH MEETING OF THE WORKING COMMITTEE OF THE I.M.A.

[SUBJECT TO CONFIRMATION]

The 48th Meeting of the Working Committee was held at Lucknow in the Central Drug Research Institute, Chattar Manzil, on 5th and 6th October, 1953. The following members were present:—

(*a*) *Ex-Officio members*: 1. Dr. B. V. Mulay (Sholapur), President; 2. Dr. C. S. Thakkar (Bombay), Senior Vice-President; 3. Dr. A. P. Mittra (New Delhi), Honorary Jt. Secretary; 4. Dr. S. N. Mitter (New Delhi), Honorary Jt. Secretary; 5. Dr. R. Sinha (Calcutta), Hony. Jt. Secretary; 6. Dr A. D. Mukharji (Calcutta), Editor, Journal, I.M.A.

(*b*) *Representatives from the Provincial (State) Branches*: 7. Dr. G. V. Hanumantha Rao (Guntur), (in place of Dr. B. Tirumalrao); 8. Dr. E. S. Reddy (Nellore), (Andhra Prov. Br.); 9. Dr. P. K. Chatterjee (Calcutta); 10. Dr. A. C. Ukil (Calcutta); 11. Dr. B. K. Ghosh (Ichapore-Nawabganj); 12. Dr. A. N. Roy (Calcutta), (in place of Dr. J. Mojumdar), (Bengal Prov. Br.); 13. Dr. U. B. Narayan Rao (Bombay), (Bombay Prov. Br.); 14. Dr. S. Samaddar (Patna); 15. Dr. D. Prasad, (Patna); 16. Dr. R. Prasad (Arrah), (in place of Dr. P. N. Sinha), (Bihar Prov. Br.); 17. Capt. R. C. Goulatia (New Delhi), (Delhi Prov. Br.); 18. Dr. P. R. Trivedi (Ahmedabad); 19. Dr. B. G. Mehta (Ahmedabad), (in place of Dr. C. P. Bhat), (Gujarat and Saurashtra Prov. Br.); 20. Dr. U. R. Pargaonker (Hyderabad-Dn.), (in place of Dr. G. S. Malkote), (Hyderabad-Dn. Prov. Br.); 21. Dr. G. V. Joshi (Hubli), (Maharashtra and Karnatak Prov. Br.); 22. Dr. F. C. Shori (Amritsar); 23. Dr. R. K. Malhautra (Amritsar), (in place of Dr. B. L. Kapur), (Punjab State Br.); 24. Dr. (Lt.-Col.) T. S. Shastry (Madras); 25. Dr. T. S. Balasubramaniam (Trichy), (in place of Dr. P. A. S. Raghavan); 26. Dr. P. B. Annangarachari (Madras), (in place of Dr. K. C. Nambiar), (South Indian Prov. Br.); 27. Dr. A. N. Ghei (Gwalior), (Madhya Bharat Prov. Br.); 28. Dr. D. G. Ojha (Alwar), (Rajputana Prov. Br.); 29. Dr. H. Hukku (Lucknow); 30. Dr. S. N. Saxena (Kanpur); 31. Capt. H. N. Shivapuri (Kanpur), (Uttar Pradesh Prov. Br.); 32. Dr. B. Siddappa (Mysore); 33. Dr. M. Kothamdaram (Mysore), (Mysore Prov. Br.).

(*c*) *Co-opted Members*: 34. Dr. P. K. Guha (Calcutta); 35. Dr. A. P. Shukla (Ahmedabad); 36. Dr. J. N. Bahadur (New Delhi); 37. Dr. C. M. Mehta (Bombay); 38. Dr. K. K. Sen Gupta (Calcutta); 39. Dr. A. K. Bose (Calcutta).

(*d*) *Invited Members*: 40. Dr. P. L. Sood (Lucknow); 41. Dr. R. N. Tendon (Lucknow); 42. Dr. M. Sidhu (Lucknow); 43. Dr. B. Mukherji (Lucknow).

Dr. C. S. Thakkar, the senior Vice-President took the chair since Dr. B. V. Mulay, the President, had arrived a little late.

Before the meeting commenced, on a motion from the Chair, the Editor of the Journal, Dr. A. D. Mukharji, was congratulated on being appointed a Minister of State, West Bengal, in charge of the Health Portfolio.

Dr. S. C. Sen, the Honorary General Secretary, was also congratulated on his election for the third time to the Council of the World Medical Association with the highest number of votes.

1. *RESOLUTION OF CONDOLENCE*:

The following condolence resolution was unanimously passed, all members standing and observing silence for one minute:—

"This meeting of the Working Committee of the I.M.A. places on record its deep sense of sorrow at the sad demise of the following members of the Association and conveys its heartfelt sympathy to the members of the bereaved families:—

1. Dr (Major) N. Gangadharan (Madras), 2. Dr. J. Israyel (Mahboobnagar), 3. Dr. C. G. Shah (Ahmedabad), 4. Dr. V. N. Desai (Sangli), 5. Dr. H. V. Sovanur (Belgaum), 6. Dr. B. U. Purahit (Rajpipla), 7. Dr. S. R. Madangopal Naidu (Madras), 8. Dr. K. S. Captain (Bangalore), 9. Dr. P. S. Kuppaswamy (Trivandrum), 10. Dr. P. S. Srinivasan (Madras), 11. Dr. T. S. Tirumurti (Madras), 12. Dr. G. N. De (Dooars), 13. Dr. R. H. Acharya (Jalgaon), 14. Dr. C. C. Bose (Calcutta), 15. Dr. R. K. Narasinhamurthi (Davangere) and 16. Dr. B. N. Sinha (Samastipur).

2. *MESSAGES OF INABILITY TO ATTEND THE MEETING*:

Messages of inability to attend the meeting received from the following members were read:——1. Dr. S. C. Sen (New Delhi) Honorary General Secretary, 2. Dr. H. R. Dawar (Delhi) Honorary Treasurer, 3. Dr. P. N. Sinha (Patna), 4. Dr. T. N. Banerji (Patna)—co-opted, 5. Dr. S. N. Kaul (New Delhi)—co-opted, 6. Dr. K. C. Nambiar (Madras), 7. Dr. V. R. Dhamdhere (Poona), 8. Dr. C. P. Bhat (Bhavnagar), 9. Dr. C. O. Karunakaran (Trivandrum), 10. Dr. P. A. S. Raghavan (Trichy), 11. Dr. B. L. Kapur (Ludhiana), 12. Dr. P. C. Duarah (Gauhati) and 13. Dr. B. Tirumala Rao (Vizagapatam).

3. *CONFIRMATION OF THE PROCEEDINGS OF THE LAST MEETING OF THE WORKING COMMITTEE HELD AT CALCUTTA FROM 30TH APRIL TO 2ND MAY, 1953*:

A letter from Capt. Shivapuri regarding the question of 'invited' members was read. It was agreed that the President could invite a few members to the Working Committee. Such members could not take part in voting, but could be paid Travelling Allowance at the direction of the President, as special cases.

It was also agreed that the speech of Mr. Amin be recorded and it be noted that the Indian Chemical Manufacturers Association agreed to associate with the Indian Medical Association jointly on matters concerning the Pharmaceutical and Chemical Industry. The Central Office was authorised to contact Mr. Hamied and Mr. Amin and do the needful.

The Minutes of the 47th Meeting of the Working Committee held at Calcutta subject to the observations in the preceding paragraph were confirmed.

At this stage, Dr. C. S. Thakkar, Dr. H. Hukku, Dr. U. B. Narayan Rao and Dr. P. R. Trivedi were appointed scrutineers for counting of votes for the election of the President and the three Vice-Presidents.

4. *BUSINESS ARISING OUT OF THE PROCEEDINGS OF THE LAST MEETING OF THE WORKING COMMITTEE:*

At this stage, the President, Dr. B. V. Mulay arrived and took the chair.

After a discussion in which several members took part, it was recorded that attempts should be made to supply the Agenda with as much detail as possible.

Before this item was taken up, Dr. R. C. Goulatia raised a point of order saying that the papers of the Agenda beyond item No. 4 were not supplied to him. Dr. A. P. Mittra the Honorary Joint Secretary, replied that it was not possible to supply every correspondence and detailed letters pertaining to items to all members and said that if any member was particularly interested in having full details on any particular item, these could readily be supplied.

(1) *Revision of Scale of fees for examination of Life Insurance cases.*

Dr. Chamanlal M. Mehta reported the progress made by him after personal contact with some of the bigger Companies. He said that 80 per cent of the Insurance came to 20 big Companies and suggested that if we informally contacted these companies first, we might be able to have an easier progress on the official plan. A discussion followed in which Dr. B. K. Ghosh, Dr. S. Samaddar and others took part.

It was agreed that Dr. Chamanlal M. Mehta be allowed to continue the negotiations further.

(2) *System of Honorary Medical Officers.*

The note prepared by the medical education sub-committee was considered. After a general discussion, in which Dr. Mulay, Dr. Thakkar, Dr. Chamanlal M. Mehta, Dr. A. C. Ukil, Dr. A. K. Bose, Dr. P. K. Guha, Capt. R. C. Goulatia, Capt. H. N. Shivapuri, Dr. D. G. Ojha, Dr. P. K. Chatterjee, Dr. Rajeswari Prosad, Dr. R. Sinha, Dr. Hanumantha Rao and others participated, the following decisions were arrived at:—

(a) The District, Sub-Divisional and Taluka hospitals should be expanded and properly equipped for rendering specialist treatment.

(b) As it may not be possible for the State Governments to afford the cost of appointment of whole-time specialists in all such hospitals, in the near future, specialists should be attached to these hospitals, on a part-time or honorary basis.

(c) In such non-teaching hospitals, adequate allowance should be paid to part-time and honorary medical officers to enable the qualified young specialists to settle down in such areas. The I.M.A. suggests a sum of about Rs. 300/- p.m. for this purpose. If very experienced and senior specialists are available, they may be paid a small conveyance allowance or they may, if willing, be asked to work without any allowance or honorarium.

(d) Such specialists should be expected to give free service to the poor patients only. Where private nursing homes or private hospitals do not exist, for the richer section of the population "paying beds" should be arranged in charitable hospitals, in charitable wards and fees charged according to a schedule of charges fixed for this purpose. The fees realised from the paying patients should be credited to the hospital fund, with a view to stop corrupt practice in Government and other hospitals and to encourage establishment of private nursing homes.

(e) The part-time and honorary medical staff should have the same status and the privileges that are enjoyed by the paid medical staff of similar cadres. While on study leave or on leave on duty or on deputation, the part-time and honorary officers should be paid the same remuneration and allowances as enjoyed by the whole-time medical officers.

(f) The part-time and honorary medical staff should be subjected to the same disciplinary measures regarding attendance, leave, etc., but they should not be expected to work for more than 2 or 3 hours in a day.

(g) *Teaching Hospitals or Medical College Hospitals.*

(i) It is desirable to have one unit of whole-time teachers appointed on adequate pay and allowances, even in the clinical course. In the existing circumstances, it is necessary to continue appointment of part-time or honorary clinical teachers. For proper training facilities, whole-time registrars should be appointed one in each unit on a salary of Rs. 300/- to Rs. 400/- p.m. so that in due course, they may either take up the positions of the whole-time, part-time or honorary clinical teachers. Thus a Medical Education Service may be built up from the stage of House Staff to that of the head of the unit.

(ii) Each unit should be composed of a senior teacher (whole-time, part-time or honorary), a junior teacher (whole-time, part-time or honorary), a whole-time registrar and necessary house-staff. About 25 beds and 10 students should be attached to each unit.

(iii) All members of the teaching staff of medical colleges, whether paid or honorary should be appointed on a permanent basis or on a five-year contract with option of renewal. Service may however, be terminated, under exceptional circumstances, on three months' notice on either side.

(iv) All medical teachers, whether whole-time, part-time or honorary should, ordinarily, retire on the completion of 60 years. After the age of 60 years, some of them may be appointed as *Consulting* Surgeons and Physicians, on a purely honorary capacity.

(v) Honorary *Senior* Surgeons and Physicians (including Specialists of all categories) should have the same status and privileges as the Professors and should not be expected to work for more than 2 hours a day for not more than 5 days in the week. Adequate conveyance allowance should be paid to such officers, if funds permit.

(vi) Honorary *Junior* Surgeons and Physicians should be given proper status, work at least 3 hours every day for 6 days in the week and should be subjected to same disciplinary measures as the paid staff. These officers must be paid an adequate allowance. The I.M.A. suggests a sum of about Rs. 400/- p.m. for such officers.

(3) *Health Minister's Conference and Scheme for training of village Vaidyas.*

This item was postponed till the next meeting of the Working Committee.

(4) *Refusal of Indian Railways to accept medical certificates issued by Private Medical Practitioners to Railway employees.*

Postponed.

(5) *Health Ministry's list of Drugs.*

Postponed as the Indian Chemical Manufacturers Association had not moved in the matter.

(6) *Therapeutic Requirements of India.*

The letters from the Director-General of Health Services, Govt. of India, and Dr. Pandit were read which requested us to wait till the Report of the Bhatia Committee was available as they were also dealing with the same subject.

It was agreed that the Honorary General Secretary should write to the Government about not taking any nominee of the Indian Medical Association on the Pharmaceutical Enquiry Committee. The Honorary General Secretary was also requested to contact the Government immediately whenever he considered that the Indian Medical Association was not represented on any Committee where it should have been represented.

(7) *Consideration of C. F. C. arrears.*

As the replies from the branches concerned were received very late and there was no time to go through them and present them in a tabulated form, the consideration of this item was postponed.

(8) *Honorarium for Asst. Editor, Journal and for Secretary of Journal.*

The opinion of the Hony. Legal Advisor was laid at the table and the steps taken by the Association on the basis of the legal opinion was approved.

(9) *Letter No. 122/52-53 dated 5-3-53 of Gujarat and Saurashtra Provincial Branch re clarification or interpretation of word "Speciality".*

This item was withdrawn by the representatives of Gujarat and Saurashtra Provincial Branch.

4 (10) *Further consideration of Bombay Public Trust Act 1950.*

12. *FURTHER CONSIDERATION OF TRUST ACT, BOMBAY, 1950. LETTER NO. 416 DATED 20-7-53 OF THE HONY. SECRETARY, M. & KARNATAK PROVINCIAL BRANCH re MALAVAN BRANCH.*

Item No. 4 (10) and item No. 12 of the main Agenda were taken up together.

The President explained in detail the implications of this and suggested certain deletions. Dr. A. P. Shukla, Dr. D. G Ojha, Dr. A. N. Roy and several other members took part in the discussion which followed. The matter was postponed till the next meeting of the Working Committee.

(11) *Letter No. MC/1512/52 dated 5-2-53 of the Madras Medical Council and resolution of the Working Committee for three years' Medical Course to be started by Madras Government.*

Letters from the Madras Medical Council and Bombay Medical Council were placed at the table.

A discussion followed in which several members took part including Dr. A. D. Mukharji who stressed the importance of providing the right type of personnel by the Profession.

It was agreed that we should also reiterate our views to the Government and insist that all modern scientific methods should be made available to any one needing treatment.

(12) *Letter No. 320 dated 24-2-53 of B. V. Mulay re. rigid observance of rules regarding M. A. Forms and C.F.C.*

Deferred till consideration of Draft Rules.

(13) *Letter No. 1 (4) PHEC dated 16-3-53 of Govt. of India, Commerce and Industry, Pharmaceutical Enquiry Committee.*

Dr. A. C. Ukil described the evidence given on behalf of the I.M.A. Pharmaceutical Enquiry Committee at Calcutta and emphasized that there should be a Therapeutic Trials Scheme for all drugs that were manufactured.

The Report was approved and noted.

(14) *U. P. State Branch resolution re. Pharmacy Council.* Noted.

(15) (a) *Patenting of the crest of the I.M.A.* (b) *Name Plates received from Dr. F. C. Shori.*

(a) The letter from the U. P. State Branch regarding the design of the crest was read out. A discussion followed and it was decided to ask for the opinion of all Branches regarding the note of the U. P. State Branch requesting a change in design.

(b) Proposal dropped.

(16) *Letter No. 38 dated 19-3-53.* Jalgaon Branch.

The Working Committee was informed that through the personal efforts of President, Dr. B. V. Mulay, the differences in Jalgaon had been smoothed.

(17) *International Pharmacopoeia by World Medical Association.* Noted.

5. (a) *FORMATION OF NEW LOCAL BRANCHES.*

(b) *REVIVAL OF BRANCHES.*

(c) *SUSPENSION OF BRANCHES.*

(a) The Working Committee approved the formation of the following new local branches:—

Name of Local Branch	*Provincial Branch*	*No. of members*	*Date of formation*
1. Kalyani	Bengal	10	1-4-1953
2. Ranaghat	do.	8	do.
3. Munshirhat	do.	9	do.
4. Sitamarhi	Bihar	8	do.
5. Mokamah	do.	7	1-10-1953
6. Bihta	do.	7	1-10-1953
7. Doom Dooma	Assam	6	1-4-1953
8. Goalpara	do.	8	1-4-1953
9. Tonk	Rajputana	5	1-4-1953
10. Hissar	Punjab	10	1-4-1953
11. Gurgaon	do.	26	1-10-1953
12. Bahraich	Uttar Pradesh	14	1-4-1953
13. Hilsa	Bihar	6	1-10-1953

The decision regarding the approval of Biratnagar Branch was postponed till the next meeting of the Working Committee.

(b) The revival of the following local branches was duly approved by the Working Committee:—

1. Gonda	Uttar Pradesh	1-10-1952
2. Mathura	do.	do.
3. Azamgarh	do.	do.
4. Etawah	do.	do.
5. Nainital	do.	do.
6. Mussourie	do.	do.

The following local branches were declared suspended by the Working Committee as recommended by the Provincial (State) Branches concerned:

1. Sambalpur	Orissa	With effect from	1-10-53
2. Bhadrak	Orissa	do.	1-10-53
3. Kursia-Coalfield	Madhya Pradesh	do.	1-10-53
4. Bhavnagar Para	Gujarat and Saurashtra	do.	1-10-53

The following local branches were declared "Defunct" as recommended by the Provincial (State) Branch concerned:—

Nipani	Maharashtra & Karnatak	1-10-53
Chalkudy	Travancore-Cochin	do.
Malvan	M. & Karnatak	do.

6. *CONSIDERATION OF C.F.C.*

Dr. A. P. Mittra, the Hony. Joint Secretary read out the statement of C.F.C. arrears from various Provincial (State) Branches for the information of the house.

It was decided that the question of increase in C.F.C. should be considered along with the Draft Rules of the Indian Medical Association.

7. *ADOPTION OF AUDITED ACCOUNTS:*

(1) Central Office from 1-4-53 to 30-6-53.
(2) Journal Dept. from 1-4-53 to 30-6-53.

(1) The quarterly statement of accounts of the Central office as circulated, were considered by the house. The audit objections were also read out by the Honorary Joint Secretary. The audited accounts of the Central office as circulated for the quarter ending 30-6-53 were duly accepted and adopted.

(2) *Journal Dept. Accounts.*

Capt. R. C. Gaulatia asked if a quarterly Trial Balance Sheet is sent by the Journal Department to the Central Office or not. Dr. R. Sinha, the Honorary Joint Secretary, explained the difficulties in not presenting the same and the expenses involved.

Discussion took place in which Dr. P. K. Guha, Dr. A. C. Ukil and Dr. Chamanlal Mehta took part.

MYSORE MEDICAL CONFERENCE

The XXII Annual Medical Conference of the Mysore Medical Association (Provincial Branch of I.M.A.) and the Silver Jubilee of the Association will be held on 22-24 January 1954 at Chikmagalur.

It was decided not to incur any additional expense to carry out this system and that the present method should continue.

Capt. Goulatia asked about the transfer of 25 per cent of surplus each year to the Reserve Fund Account. Dr. Guha explained the difficulties in not doing so for the last few years. Capt. Shivapuri said that this had already been informed to the Working Committee at a previous occasion. In this connection Dr. Guha informed the house that steps in this direction had already been taken last month. The Audited Accounts of the Journal Department were then duly accepted and adopted.

8. *CONSIDERATION OF LETTER NO. AM/AS/PCR DATED 13-5-53 OF THE B.M.A. REGARDING THE NEXT BRITISH COMMONWEALTH MEDICAL CONFERENCE TO BE HELD IN TORONTO IN 1955. CENTRAL OFFICE LETTER NO. 5088/52-53 DATED 20-5-53 ADDRESSED TO THE B.M.A. AND LETTER NO. AN/AS/PCR DATED 23-6-53 RECEIVED IN REPLY AS TO THE AMOUNT WHICH I.M.A. WOULD BE CALLED UPON TO CONTRIBUTE TO THE COST OF THIS CONFERENCE:*

The correspondence exchanged between the British Medical Association and the Central Office on the subject was read out.

Dr. A. C. Ukil suggested that we should approach the Government of India for subsidy.

The matter was postponed.

9.(a) *LETTER NO. SS/121/81 DATED 3-7-53 OF THE UNDER-SECRETARY, GOVERNMENT OF INDIA, MINISTRY OF LABOUR RE. RECONSTITUTION OF EMPLOYEES' STATE INSURANCE CORPORATION AND APPOINTMENT OF MEMBERS FROM THE I.M.A.*

(b) *LETTER NO. SS. 121/66 DATED 12-8-53 OF THE UNDER-SECRETARY, GOVERNMENT OF INDIA MINISTRY OF LABOUR, RE. RECONSTITUTION OF THE MEDICAL BENEFIT COUNCIL AND NOMINATION OF TWO REPRESENTATIVES OF THE I.M.A.*

(a) Dr. Chamanlal M. Mehta of Bombay was unanimously re-elected as the representative of the Indian Medical Association on the Employees' State Insurance Corporation.

(b) Dr. C. S. Thakar (Bombay) and Dr. (Mrs.) B. Thungamma were also unanimously elected as Representatives of the Indian Medical Association to the Medical Benefit Council of the Corporation (Government of India, Ministry of Labour).

There was some discussion on the subject and Dr. Shivapuri, Dr. Ukil, Dr. Mehta and others spoke in favour of I.M.A.'s representation in the Regional Offices of the Employees' State Insurance Corporation. The following resolution was then passed nem con:—

"The Working Committee of the Indian Medical Association which has fully co-operated with the State Employees' Insurance Corporation in the development of the Scheme, urges the necessity to have a member of the organised medical profession represented on each Regional Board of the Corporation in India, and for the better working of the Scheme, requests the Corporation to make such a provision in the Constitution of the Regional Boards".

10. *REPORT OF THE SUB-COMMITTEE OF THE COUNCIL OF S. INDIAN PROVINCIAL BRANCH, I.M.A. ON EMPLOYEES' STATE INSURANCE SCHEME AND PANEL SYSTEM.*

The Report was read out by the Honorary Joint Secretary and it was recorded.

11. *LETTER NO. DATED 4-8-53 OF DR. CHAMANLAL M. MEHTA REGARDING LEGAL LIABILITIES OF DOCTORS, IN E. STATE INSURANCE SCHEME AND OPINION OF PROVINCIAL BRANCHES OF THE I.M.A. IN THE MATTER:*

Dr. Chamanlal M. Mehta's letter regarding legal liabilities of doctors of Employees' State Insurance Corporation was considered by the house. After a good deal of discussion, it was finally decided to circulate this letter to all the provincial (or State) branches of the I.M.A. to elicit opinion and then put up for consideration by the Working Committee.

12. *FURTHER CONSIDERATION OF PUBLIC TRUST ACT, BOMBAY, 1950.*

(Letter No. 416 dated 20-7-53 of the Hony. Secretary, M. and Karnatak Provincial Branch re. Malavan Branch). Already dealt with under item 4(10) of the Agenda.

13. *LETTER NO. 371 DATED 13-6-53 OF THE HONORARY SECRETARY, MYSORE PROVINCIAL BRANCH RE. RETENTION OF MEMBERSHIP OF THE I.M.A. BY THOSE SENT ABROAD AS RESIDENTS OR INTERNS FOR POSTGRADUATE TRAINING.*

The letter of Hony. Secretary, Mysore Provincial Branch was read out by the Hony. Joint Secretary. The House decided that a directive be issued to all the branches that two years' subscription be realised from candidates whose names are forwarded for internships abroad and that branches should certify this at the time of forwarding the names of the candidates.

14. *LETTERS DATED 20-7-53 AND 1-9-53 OF THE HONORARY SECRETARY, HYDERABAD DN. PROVINCIAL BRANCH RE. DATES OF THE WORKING COMMITTEE, CENTRAL COUNCILS MEETING AND ALL-INDIA MEDICAL CONFERENCE TO BE HELD IN DECEMBER AT HYDERABAD-DN.*

Dr. U. R. Pargaonker explained in detail, the arrangements that were made in connection with the forthcoming All-India Medical Conference. After some discussion, the Working Committee approved of the following dates fixed for the Meetings of the Working Committee and Central Council as well as the All-India Medical Conference:—

Working Committee meeting 24th December, 1953; Central Council meeting 25th and 26th December, 1953; All-India Medical Conference 27th, 28th and 29th December, 1953 and Sight-seeing 30th December, 1953.

15. *LETTER FROM DR. B. V. MULAY ON THE SUBJECT OF PROHIBITION:*

Dr. B. V. Mulay explained the matter and the letter was withdrawn by him.

16. (a) *CONSIDERATION OF RULES OF THE I.M.A. AS REDRAFTED BY THE AD-HOC COMMITTEE.* (b) *LETTER NO. 495 DATED 4-8-53 OF DR. B. V. MULAY, PRESIDENT, I.M.A. ADDRESSED TO DR. T. S. TIRUMURTI CONTAINING SOME SUGGESTIONS:*

The unfinished portion of the Draft Rules and By-laws of the Indian Medical Association was considered by the Working Committee. On being questioned, the President, however, opined that members of Working Committee would be entitled to move amendments in the Central Council, if they so desired.

17. *LETTER NO. F. 8-8/48-MI DATED 15-7-1953 OF ASST. SECRETARY, GOVERNMENT OF INDIA, MINISTRY OF HEALTH AND LETTER NO. 4594-L DATED 11-7-53 REGARDING ALLOTMENT OF LAND TO I.M.A. FOR CONSTRUCTION OF OFFICE BUILDING:*

Dr. A. P. Mittra, the Honorary Joint Secretary, read out a letter from the Health Ministry, Government of India, approving of allotment of land for the Central Office of the Indian Medical Association on the Delhi-Mathura Road. The House was glad to receive the news and awaited further developments. It was resolved to thank the Ministry of Health, Govt. of India, for their generous decision.

It was also decided that the Indian Medical Association should apply to the Government of India for sanction of an adequate grant for constructing the Building of the Indian Medical Association.

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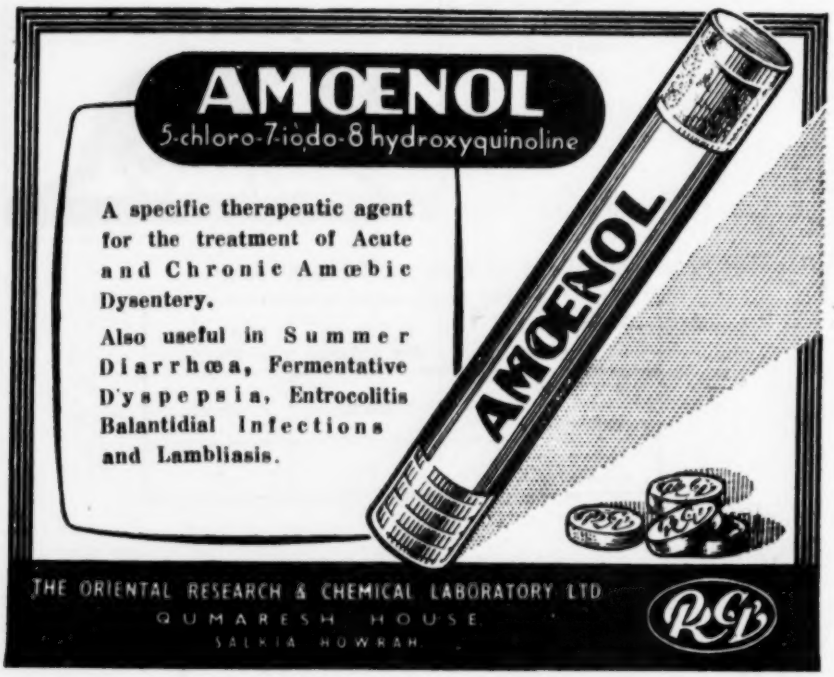
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18. *LETTER NO. 2/1132/52-53 DATED 8-7-53 OF THE HONORARY SECRETARY, ASSAM PROVINCIAL BRANCH RE. PROPAGANDA GRANT OF RS. 1000/-.*

The letter was read out by the Honorary Joint Secretary. As the Balance Sheet etc. was not received from the Assam Provincial Branch, the matter was postponed till the next meeting of the Working Committee.

19. *ELECTION OF PRESIDENT AND THREE VICE-PRESIDENTS OF THE I.M.A. FOR THE YEAR 1953-54:*

The votes for the election of President and three Vice-Presidents had been counted by the scrutineers and the President announced the following results of the election:—

FOR THE OFFICE OF PRESIDENT

	Name of member	*No. of votes secured*	
1.	Dr. S. C. Sen (New Delhi) ...	163	Elected
2.	Dr. P. B. Mukherjee (Calcutta)	11	
3.	Dr. V. R. Naidu (Mysore) ...	11	
4.	Dr. Panchanan Chatterjee (Calcutta)	10	
5.	Dr. S. N. Mathur ...	9	
6.	Dr. S. K. Mukherji ...	8	
7.	Dr. Chhabil Das (Ludhiana) ...	8	
8.	Dr. Rajeshwar Prasad (Arrah) ...	6	
9.	Dr. B. B. Bhatia (Lucknow) ...	3	
10.	Dr. K. N. Misra (Bhubaneswar) ...	2	
11.	Dr. R. E. Heilig (Jaipur) ...	2	
		233	

FOR THE OFFICES OF 3 VICE-PRESIDENTS

1.	Dr. D. V. Venkappa (Madras) ...	80 (Senior)	Elected
2.	Dr. S. Samaddar (Patna) ...	73	Elected
3.	Dr. B. L. Kapur (Ludhiana) ...	53	Elected
4.	Dr. G. V. Joshi (Hubli) ...	46	
5.	Dr. C. P. Bhat (Bhavnagar) ...	45	
6.	Dr. P. C. Chatterjee (Calcutta)	28	
7.	Dr. J. C. Banerjee (Calcutta) ...	23	
8.	Dr. J. C. Patel (Bombay) ...	20	
9.	Dr. G. S. Melkote (Hyderabad-Dn.)	20	
10.	Dr. S. K. Mukerji (Indore) ...	18	
11.	Dr. (Capt.) R. C. Goulatia (Delhi)	16	
12.	Dr. P. A. S. Raghavan (Trichy)	16	
13.	Dr. (Lt.-Col.) T. S. Shastry (Madras)	15	
14.	Dr. B. B. Bhatia (Lucknow) ...	15	
15.	Dr. P. K. Ghosh (Calcutta) ...	12	
16.	Dr. B. Barua (Gauhati) ...	12	
17.	Dr. (Lt.-Col.) K. S. Swami (Gaya)	12	
18.	Dr. Rajeshwar Prasad (Arrah) ...	12	
19.	Dr. (Mrs.) Chhotey Lal (Farrakhabad) ...	11	
20.	Dr. M. V. Govindaswamy (Bangalore) ...	10	
21.	Dr. Manohar Lal Chopra (Amritsar)	9	
22.	Dr. Amiyakumar Bose (Calcutta)	9	
23.	Dr. P. D. Khanalker (Belgaum) ...	8	
24.	Dr. I. N. Sexena (Fatehgarh) ...	8	
25.	Dr. S. R. Mitter (Ambala City)	7	
26.	Dr. E. V. Srinivasan (Madras) ...	7	
27.	Dr. R. N. Sahu (Cuttack) ...	7	
28.	Dr. P. D. Mathur (Jaipur) ...	6	
29.	Dr. C. A. Martins (Junagadh) ...	6	
30.	Dr. Jibanratan Dhar (Bongaon)	6	
31.	Dr. A. G. Leelakrishnan (Coimbatore) ...	6	
32.	Dr. M. V. Krishna Rao (Madras)	6	
33.	Dr. Ram Rakha Dheer (Jullundur)	6	
34.	Dr. (Capt.) P. S. Gupte (Nasik)	6	
35.	Dr. B. Tirumala Rao (Visakhapatam) ...	6	
36.	Dr. S. D. Arawattigi (Miraj) ...	6	
37.	Dr. P. N. Chhabra (Ambala City)	5	
38.	Dr. Tara Shankar Mathur (Jaipur)	4	
39.	Dr. D. G. Ojha (Bikaner) ...	4	
40.	Dr. (Capt.) N. N. Ghosh (Dhanbad)	3	
41.	Dr. Lachhman Das (Simla) ...	3	
42.	Dr. G. C. Pattanayak (Berhampore-Ganjam) ...	3	
43.	Dr. (Major) K. Vullakhi (Tenali)	2	
44.	Dr. Kedar Nath (Behar Sharif) ...	2	
45.	Dr. P. Satyanarayana (Berhampore, Ganjam) ...	2	
46.	Dr. R. B. Mehta (Ahmedabad) ...	2	
47.	Dr. B. N. Venkata Das Appa (Mysore)	2	
48.	Dr. V. S. Desai (Nadiad) ...	1	
49.	Dr. C. Suryanarayana Murty (Vijayavada) ...	nil	

29 Ballot papers were invalidated according to rules.

Accordingly, the President, Dr. B. V. Mulay, declared the following elected:—

PRESIDENT—Dr. S. C. Sen (New Delhi).

3 VICE-PRESIDENTS—1. Dr. D. V. Venkappa (Madras) —Senior.

2. Dr. S. Samaddar (Patna).

3. Dr. B. L. Kapur (Ludhiana).

The house passed a vote of thanks to the scrutineers.

20. *CORRESPONDENCE FROM DR. H. N. SHIVAPURI, HONORARY SECRETARY, UTTAR PRADESH PROVINCIAL BRANCH SEEKING CLARIFICATION WHETHER THE LOCAL BRANCHES OF THE I.M.A. CAN HAVE THEIR ROLLS, APART FROM ORDINARY MEMBERS UNDER RULE 7A(c) AND 7B(c), HALF MEMBERS, PART-TIME MEMBERS AND LOCAL MEMBERS WITHOUT BEING BOUND TO PAY C.F.C. ON THEIR BEHALF.*

The letter from Capt. Shivapuri on the subject was considered. The Working Committee interpreted that a circular be sent to all the branches explaining that the C.F.C. has to be paid by all the members on the rolls of the branches.

21. *PROVIDENT FUND OF THE STAFF OF THE CENTRAL OFFICE OF THE INDIAN MEDICAL ASSOCIATION:*

The Honorary Joint Secretary informed the house that in accordance with resolution passed by the Working Committee at its meeting held at Gauhati on 14th and 15th October, 1951, the employees of the Central Office were entitled to the benefits of the contributory Provident Fund with retrospective effect, but in view of the fact that they could not afford to contribute to the Fund the entire amount due, since the date of their confirmation, they, as a special case, were allowed, with effect from June, 1953, to deposit double the amount of their monthly share of contribution in their account so as to square up the outstanding arrears. After the arrears were made up, they would continue to contribute their usual share monthly. He also informed the house that the Association's share of contribution as budgeted for, in the year 1952-53, had been placed in the Provident Fund account of the employees with retrospective effect.

The house noted the information given by the Honorary Joint Secretary and the action taken was approved of.

22. *LETTER DATED 6-8-53 OF DR. B. V. MULAY, PRESIDENT I.M.A. ADDRESSED TO THE PRIME MINISTER, INDIA, RE. DEATH OF DR. SHYAMA PRASAD MUKHERJEE.*

Dr. B. V. Mulay, President, informed the house that he had received no reply yet to his letter (copy already circulated to members) either from the Prime Minister of India or the Government of Kashmir. This information was noted by the house.

23. "CONSIDERATION OF REFUND OF DEPOSIT MONEY OF CERTAIN CANDIDATES FOR RESIDENCIES AND INTERNSHIPS ABROAD" was also taken at this stage.

The question of refund of money deposited by candidates last year against passage was considered. The Honorary Joint Secretary (Dr. S. N. Mitter) informed the house that these candidates refused to proceed abroad for one reason or the other after residency appointments had been obtained for them, and that three such candidates had already been refunded their deposit money by the Central Office, as they could not get leave of absence and release from their respective Governments:

After a good deal of discussion, the following decisions were arrived at:

1. That the Working Committee approves of the Hony. General Secretary's action in refunding deposit money to three of the candidates mentioned above.

2. That the refund of money be made to other 6 candidates also and the accounts be adjusted.

The house approved of the new draft of contract to be signed henceforth by all the candidates, after the legal advice was taken from the Hony. Legal Adviser on this issue. It was also decided to issue regular stamped receipts to candidates who had deposited money with the Central Office.

On the proposal of Dr. S. N. Mitter, the Honorary Joint Secretary, a Selection Committee consisting of the following was formed to interview candidates for residency training abroad: 1. The sitting President. 2. The Incoming President. 3. The Honorary General Secretary, (or one of the Hony. Jt. Secretaries of the I.M.A.) with powers to co-opt (if thought desirable or necessary).

A suggestion that the deposit money from candidates be increased from Rs. 500/- to Rs. 1000/- was not accepted by the house.

24. *RESOLUTION OF DR. T. S. TIRUMURTI re. COMMENTS IN THE RADIOLOGICAL JOURNAL ON THE OPINION OF THE I.M.A. RE. DRAFT RADIOLOGY COUNCIL BILL.*

The letter of Dr. Tirmurti was read out, but the decision was deferred. It was decided to obtain a copy of the Radiological Journal in which the article in question was published. (February 1953 issue).

25. *RESOLUTION FROM THE KUTCH PROVINCIAL BRANCH RECOMMENDING ACCEPTANCE OF D.A.S.F. AND G.F.A.M. BY THE INDIAN MEDICAL ASSOCIATION FOR MEMBERSHIP.*

This item was withdrawn as obviously, according to Rules of the Indian Medical Association, these qualifications could not entitle eligibility for membership of the Indian Medical Association. It was, however, agreed that all Provincial and State branches be requested to see that the local branches followed the relevant rules re: membership.

26. *REPLIES BY THE HONORARY GENERAL SECRETARY, I.M.A. TO THE GENERAL QUESTIONNAIRE ISSUED BY THE PRESS COMMISSION, GOVERNMENT OF INDIA, NEW DELHI.*

The action taken by the Honorary General Secretary and the Editor, J.I.M.A., in this connection, was approved of by the Working Committee.

27. *LETTER NO. 540 DATED 3-9-53 OF DR. B. V. MULAY, PRESIDENT, I.M.A., REGARDING DEVASTATION BY UNUSUAL FLOODS OF THE RIVER GODAVARI, RELIEF WORK AND HELP FROM THE CENTRAL FUNDS OF THE ASSOCIATION:*

The position was explained by the President that the devastation has not proved so great as anticipated and no help was needed for relief. The explanation was noted.

28. *LETTER NO. 582 DATED 1-9-53 OF DR. B. V. MULAY REGARDING CONDENSED COURSE OF M.B.B.S., FOR LICENTIATES.*

Letter from Dr. B. V. Mulay was considered. Discussion took place and it was finally agreed upon:

(1) that the condensed M.B.B.S. students should not be asked to appear in the First M.B.B.S. Examination (Anatomy, Physiology, etc.)

(2) that I.Sc. should not be compulsory, as in certain Universities it is compulsory for an entrant to Condensed M.B.B.S. course.

(3) The "two years" condensed course should continue, so long as there was demand for it.

It was also decided to write letters to all the Universities and Educational Institutions on the suggestions mentioned above.

29. *LETTER DATED 5-8-53 OF THE MINISTER OF HEALTH, GOVERNMENT OF INDIA, REGARDING ANNUAL GRANT TO INVITE WELL-KNOWN DOC-*

TORS FROM ABROAD TO DELIVER LECTURES DURING OUR ANNUAL CONFERENCE.

The letter of the Honorary General Secretary to the Hon'ble Minister of Health and reply received thereto, were read out by the Honorary Joint Secretary.

In the light of the letter from Rajkumari Amrit Kaur, Hon'ble Minister of Health and on the suggestion of Dr. A. C Ukil, it was decided that we should approach the Indian Science Congress for inclusion of one or two medical men amongst their invitees on recommendation of I.M.A.

30. *LETTER NO. 29-39/53-MI DATED 2-9-53 OF THE D.G.H.S. REGARDING ANNUAL GRANT FOR PUBLICATION OF "YOUR HEALTH".*

The Hony. Jt. Secretary informed the house that attempts were being made by the Central and Journal offices to secure an annual grant for "Your Health".

The information was noted.

31. *LETTER NO. 7-24-53-M-I DATED 25-8-53 OF THE D.G.H.S. REGARDING MEDICAL DAYS FOR FRANCE AND FRENCH UNION TO BE CELEBRATED IN 1954 AND REQUEST FOR ATTENDANCE BY THE SOCIETIES FOR MEDICINES IN INDIA:*

It was decided that we should send them a "GOOD WILL" Message and ask for more information regarding the celebration.

32. *CONSIDERATION OF THE QUESTION WHETHER HONORARY MEMBERS OF THE I.M.A. ELECTED UNDER RULE 5A AND 8A OF THE I.M.A. ARE ENTITLED TO GET A FREE COPY OF THE JOURNAL EVERY MONTH:*

The Working Committee decided that the Honorary Members of the Indian Medical Association can be elected by the Central Council only as per rule 8A and are entitled to get a free copy of the Journal of I.M.A. free of cost as per rule 9(a). The action taken by the Honorary Secretary, Journal Department in the case of Dr. P. Bose of Tezpur Branch was approved of.

33. *LETTERS DATED 6-9-53 AND 10-9-53 OF DR. S. K. CHAUDHURI, BANARAS, AND LETTER DATED 10-9-53 OF DR. H. N. SHIVAPURI REGARDING PUBLICATION OF HEALTH JOURNAL IN HINDI ENTITLED "APKA SWASTHYA".*

Letters from Capt. S. K. Chaudhuri and Capt. H. N. Shivapuri were discussed and the house passed the following resolution unanimously:—

"Resolved that permission in allowing U. P. State Branch to bring out the Hindi Edition of the "Apka Swasthya" be regularised at this meeting and the branch be allowed to use the crest of the Indian Medical Association on this publication".

Capt. H. N. Shivapuri and Dr. P. K. Guha explained the details of the scheme.

34. *ANNUAL REPORT FOR THE YEAR 1952-53.*

It was decided to circulate this to the members of the Working Committee for eliciting their opinion within two weeks from the date of its receipt. Any little additions and/or alterations suggested by the members might be incorporated in the final Report for adoption by the Central Council.

35. *ANY OTHER BUSINESS WITH THE PERMISSION OF THE PRESIDENT.*

(a) *Protest against two years medical course*: It was decided to protest against the two years' medical course as envisaged by the Central Government.

(b) *Request for financial aid to Dr. Hingorani.* The Working Committee regretted that it could not give any more aid to Dr. Hingorani.

(c) *Travel by Cancer Patients to Bombay.* The matter was discussed and it was decided to approach the Health Minister to advise and influence the various States to place the facilities of treatment for Cancer patient in States to enable the patient to have such treatment in nearby towns (or other places) in their own States to avoid long travels.

(d) *Amendment to the Indian Medical Council Act.* It was decided to correspond with the Government on the subject.

The Working Committee opined that the doctors must not be taxed twice for registration with the Medical Council of India and also with the State Medical Councils as envisaged in the amendment of the Bill.

(e) *Spiritous Preparations Bill.* On the request of Capt. R. C. Goulatia, it was decided to collect necessary information from all the Provinces about the Spiritous Preparations Bill and discuss the matter at a later meeting of the Committee.

(g) *Letter from the Punjab State Branch re. Employees' State Insurance Scheme.*

The letter from the Punjab State Branch on the subject was read out by the Honorary Joint Secretary and after much discussion the Working Committee approved of the action of the Punjab State Branch in expelling some members, who had acted against the dictates of the Branch and enrolled themselves as panel doctors in the Employees State Insurance Corporation.

The Working Committee also approved of the reply sent by the Honorary General Secretary to a letter on the above subject, received from the Director of Health Services, Punjab.

The Working Committee decided that Provincial Branches should inform the Central Office of their negotiations with the E. S. I. Corporation authorities and should follow the directions of the Working Committee in this connection.

The Working Committee discussed the subject at length and it was decided that:—

(i) responsibility of supplying costly drugs should not be laid on the doctors undertaking the work in the Employees' State Insurance Scheme.

(ii) Ordinary medicines might be supplied by the doctors concerned.

(iii) Doctors should take up the duties of office-consultations and doing office-treatment and the visits should be duly specified.

(g) *Letter from Dr. S. C. Sen, Honorary General Secretary, I.M.A. written from London.*

The letter from Dr. S. C. Sen conveying his impressions of the World Medical Association Assembly Meetings and also of the World Congress on Medical Education was read out and recorded.

(h) *Letter of Dr. A. D. Mukharji, Editor, J.I.M.A.*

The letter of Dr. A. D. Mukharji tendering his resignation from the Editorship of the J.I.M.A. was placed before the house.

At the request of the Working Committee, he, however, agreed to continue in office till the next annual meeting of the Central Council.

Acknowledgments:

The following resolutions were proposed from the chair and passed unanimously:—

"This meeting of the Working Committee of the I.M.A. places on record its deep appreciation and thanks for the hospitality and courtesy accorded to its members on the occasion of the meeting held at Lucknow on 5th and 6th October, 1953 by the Lucknow Branch and U. P. State Branch of the I.M.A.

(2) The Working Committee of the I.M.A. offers its grateful thanks to the following for permission to hold the meeting of the Working Committee in the premises of Central Drug Research Institute at Lucknow and for the courtesy extended to the members:—

(1) Dr. B. Mukherji, Director, Central Drug Research Institute, Lucknow.
(2) Acharya Jugal Kishore, Vice-Chancellor of Lucknow University.
(3) Col. R. K. Tandon, Medical Superintendent and Principal, Medical College, Lucknow.
(4) Shri G. K. Tandon, Hony. Secretary of Moti Lal Nehru Memorial Society.

(3) The Working Committee offers its grateful thanks to Sri C. P. Gupta, Minister, Health and Civil Supplies, U.P. for the courtesy shown to its members at Lucknow.

With a vote of thanks to the chair, the meeting came to close.

DR. B. V. MULAY,
President.

DR. A. P. MITTRA,
Honorary Joint Secretary.

BRANCH NOTES

ANANTAPUR BRANCH—A meeting of the branch was held on 28-11-53 with Dr. D. Ramanath in the chair. Dr. K. Raghavendra Rao spoke on Varicosa Veins.

BELLARY BRANCH—The annual meeting of the branch was held on 31-10-53. It was decided to affiliate the branch to the Mysore Provincial Branch. Office-bearers for 1953-54 were elected with Dr. M. J. Rajanna as president and Dr. Y. P Vittal as secretary.

BOMBAY BRANCH—A meeting of the Managing Committee of the branch was held on 29-11-53. Nine members were present. Dr. U. B. Narayanrao explained the position of E.S.I. in Punjab where the I.M.A. has taken disciplinary against members taking up jobs in E. S. I. against the wishes of the I.M.A. Twenty-one new members were admitted and resignations of 4 members were accepted.

COIMBATORE BRANCH—A clinical meeting of the branch was held with Dr. Y. P. Vasudevan in the chair. Forty-five members were present. Dr. C. H. Venkateswaran spoke about "Itching—Causes and Management".

DHANBAD BRANCH—The annual meeting of the branch was held on 4-10-53 with Dr. A. N. Ghatak in the chair. Fifty-one members were present. The annual report and the audited accounts of the branch from 1-1-53 to 30-9-53 were adopted. Office-bearers for the year 1953-54 were elected with Dr. (Major) H. C. Mullick as president and Dr. R. Mukherjee as secretary and Dr. A. M. Roy, Dr. A. Gupta, Capt. S. C. Mitra, Dr. S. N. Roy as Jt. Secretaries.

EAST GODAVARI BRANCH—A meeting of the branch was held on 19-9-53 with Dr. S. Krishnarao in the chair. Dr. Sanyasiraju opened the symposium on Typhoid Fever. Dr. B. Veeraraju opened another symposium on Cholera.

FEROZEPUR BRANCH—A meeting of the branch was held on 17-11-53. Eighteen doctors were present. Dr. J. S. Sethi Spoke on Neurosis in General Practice.

GHATKOPOR BRANCH—The annual report of the branch for the year 1952-53 shows that the year started with 25 members on the roll and closed with 33 members. There were 3 important functions during the year, (1) A Trip to Vihar Lake, (2) Visit to T.C.F. Factory, (3) Annual Dinner.

GHUGUDANGA BRANCH—The annual report of the branch shows that 33 members were on the roll. Eight monthly meetings and 2 executive committee meetings were held during the year. Scientific papers were read in the clinical meetings. The branch initiated and organised an outdoor chest clinic in the locality in co-operation with the Cossipore Social Service Association.

GIRIDIH BRANCH—The annual general meeting of the branch was held on 1-11-53. Dr. H. C. Chatterjee presided. Ten members were present. After the annual report for 1952-53 and the audited accounts were accepted, office-bearers were elected with Dr. H. C. Chatteriee as president and Dr. B. Ghosh as secretary and Dr. H. P. Shaw as Jt. Secretary.

JAIPUR BRANCH—The 9th annual function of the branch was held on 25-10-53. Three hundred doctors were present. Dr. Col. M. K. Kelavkar, Director of Medical and Health Services, Rajasthan inaugurated the function. The recognition of S. M. S. College by the Indian Medical Council was announced. A symposium on Tuberculosis was held. Dr. H. S. Andleigh, Dr. L. M. Sanghivi, Dr. G. L. Talwar, Dr. D. R. Nagpul and Dr. R. E. Heilig participated in the symposium.

KHOWANG-MORAN-SEPON BRANCH—A meeting of doctors was held on 9-8-53 and a branch was formed to be styled as above. It was decided to locate the office at Khowang ghat. Dr. J. C. Dutta was elected the president and Dr. H. C. Sen as secretary for the year 1953-54.

KOLHAPUR BRANCH—In a meeting of the branch Dr. B. B. Rashinghan was elected the president and Dr. V. G. Gogte the Secretary for the year 1953-54. In a meeting held on 30-10-53 the members condoled the death of Dr. S. V. Jamenis. In the clinical meeting held on the same date, Dr. P. B. Bhadre read a paper on Infertility.

PATNA BRANCH—The annual general meeting of the branch was held on 26-10-53 with Prof. D. Ram in the chair. One hundred fifty members were present. Office-bearers for 1953-54 were elected with Prof. D. Ram as president and Dr. A. K. Sen as general secretary and Dr. B. N. Prasad and Dr. U. P. Verma as Jt. Secretaries. One privilege committee was set up as laid down in the rules. The meeting proposed the formation of a committee to find out ways and means to stop the sale of spurious drugs. It also viewed with concern the growing deterioration of hygienic condition of the town. Enhancement of C.F.C. was not approved. The annual report of the branch shows that a refresher course was arranged during the year and 28 lectures were delivered in course of 7 months. The executive committeee met five times during the year.

PORBANDAR BRANCH—A clinical meeting of the branch was held on 25-10-53. Twenty-one members were present. The members condoled the death of Dr. T. S. Tirumurti. Dr. R. D. Dave read a paper on "Non-Penetrating Injury of the Eyes", Dr. H. H. Chavda read his paper on "Treatment of Asthma with Carbon Dioxide."

RAJPUTANA PROVINCIAL BRANCH—A meeting of the working committee of the branch was held on 25-10-53. Condolence resolutions on the death of Dr. T. S. Tirumurti and Dr. A. K. Sen were passed. Resolutions on Implementation of Medical Act of 1952, Enforcement of Drug Act to eliminate quackery, Extension of condensed courses for L.M.P.s were also passed.

ROHTAK BRANCH—A meeting of the branch was held on 15-11-53 Dr. T. S. Gill was in the chair. Office-bearers for 1953-54 were elected with Dr. T. S. Gill as president and Dr. P. C. Goyal as secretary.

SHIMOGA BRANCH—Members of the branch visited a Lambadi Tand on 15-11-53 to conduct a health survey and some men, women and children were examined. It has been proposed to visit rural areas at least twice a month.

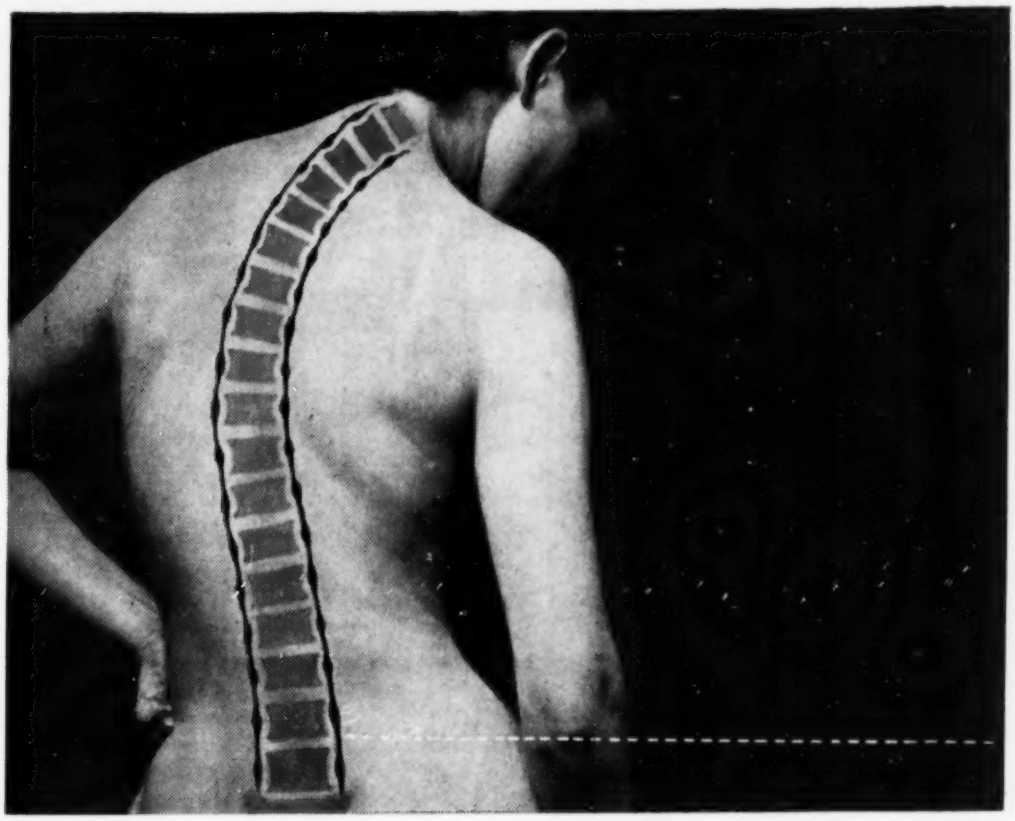
SOUTH INDIAN PROVINCIAL BRANCH—The annual report of the branch for the year 1952-53 shows an appreciable increase in membership of 218 over that of the last year. It had 4 provincial council meetings during the year and the rules of the provincial council were modified in some respects. The election of the president and vice-presidents were held under the new rules. Dr. K. C. Nambiar has been re-elected president for another term.

TARAKESWAR BRANCH—A general meeting of the branch was held on 7-11-53. Office-bearers for 1953-54 were elected with Dr. S. K. Gupta (Jamalpur) as president and Dr. R. K. Goswami as secretary.

TENALI BRANCH—The inaugural meeting of the branch was held on 31-10-53 under the presidentship of Dr. M. Imaduddin. Col. J. M. Skinner of Anantham hospital delivered the inaugural address. Dr. K. Veeraiah showed a case of Osteogenesis Imperfecta and another of Pellegrini-stiedas disease. Dr. C. Krishnaiah described a case of Vesico-Vaginal Fistula operated successfully by the abdominal route. Dr. M. Seshagiri described a case of T. B. Meningitis. Dr. B. Pulliah showed pathological specimens of enlarged prostrates and Dr. M. Imaduddin, a case of strangulated hernia. The symposium on Amaebic Infection in Human Body was opened by Dr. C. Krishnaiah and Cap. M. Imaduddin. Dr. K. Pushpavathi, Dr. P. S. Sastry and Capt. B. B. Rao took part in it.

TIRUCHY BRANCH—The annual meeting of the branch was held on 24-10-53. One hundred and twenty members were present. Dr. T. S. Balasubramanyam presided. Office-bearers were elected for the year 1953-54 with Dr. Srinivasan as president and Dr. T. V. Ranganathan as secretary and Dr. A. Dharmarajan as Jt. Secretary. Dr. M. S. Narayana read a paper on Anaemias and their treatment. Dr. G. I. Gnanadic on Glass, its use and abuse. Next Dr. R. V. Rajam spoke on Medical Practitioners and the Antibiotic Era in the Venereal Diseases Control. A film show on Surgical treatment of Hypertension was also shown.

VIJAYAWADA BRANCH—The annual meeting of the branch was held on 26-10-53 with Dr. C. Suryanaravanamurty in the chair. Office-bearers for 1953-54 were elected with Dr. C. Suryanaravanamurty as president and Dr. K. S. Sambasivarao as secretary.



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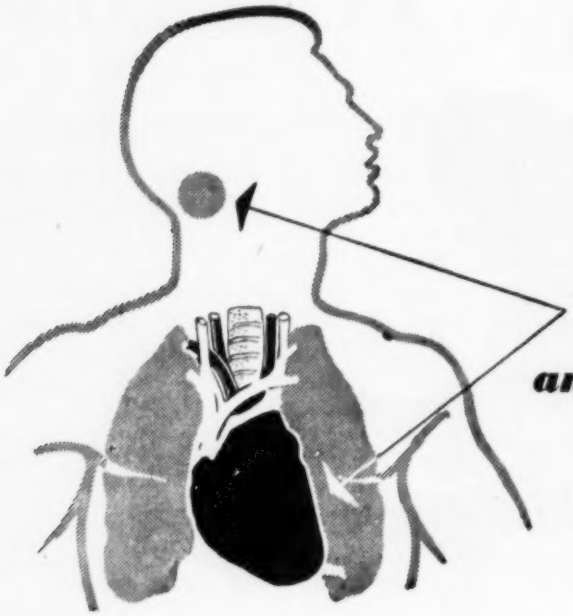

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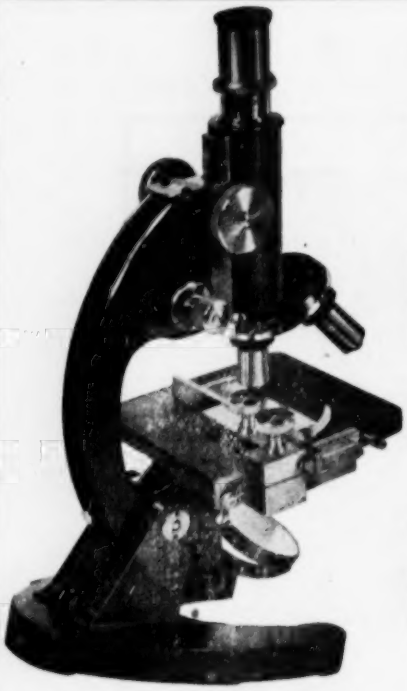

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References: Angiology, (Feb.) 1952 . . 1. Winsor, T. and Humphrey, P., p.1. 2. Perlman, A., p.16. 3. Samuels, S. S. and Padernacht, E. D., p.20.

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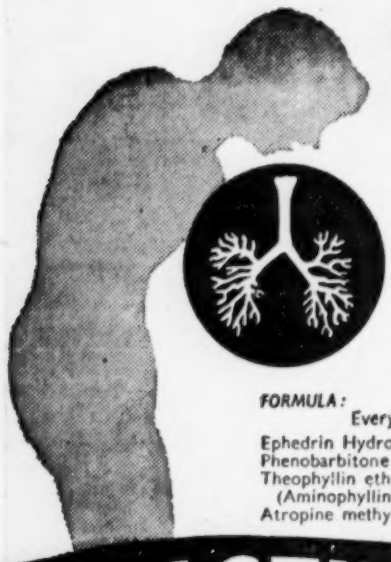

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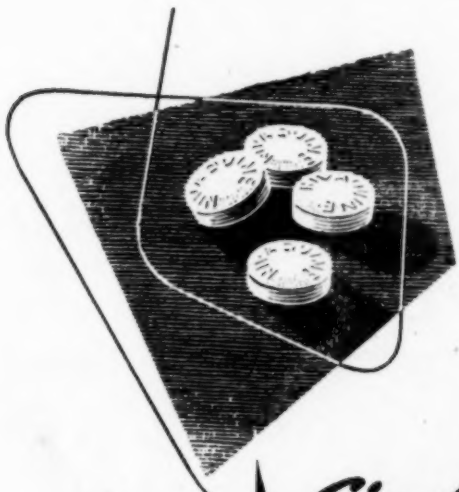

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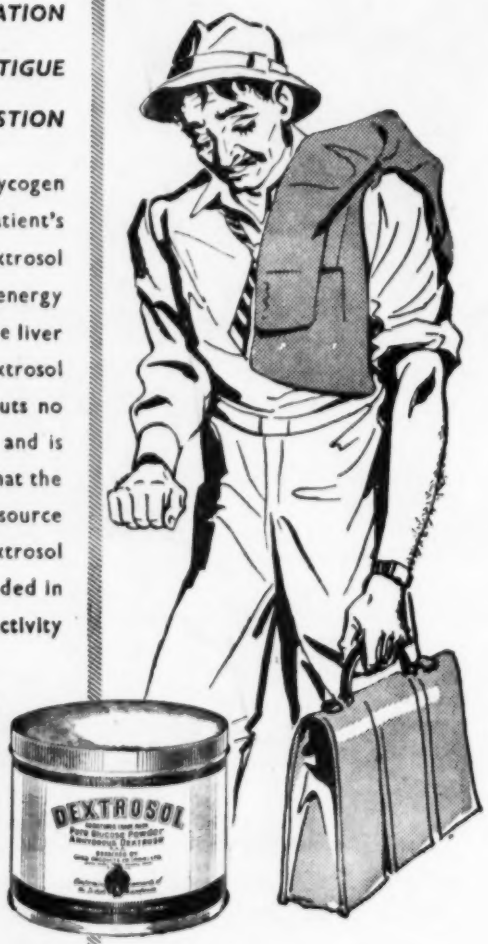

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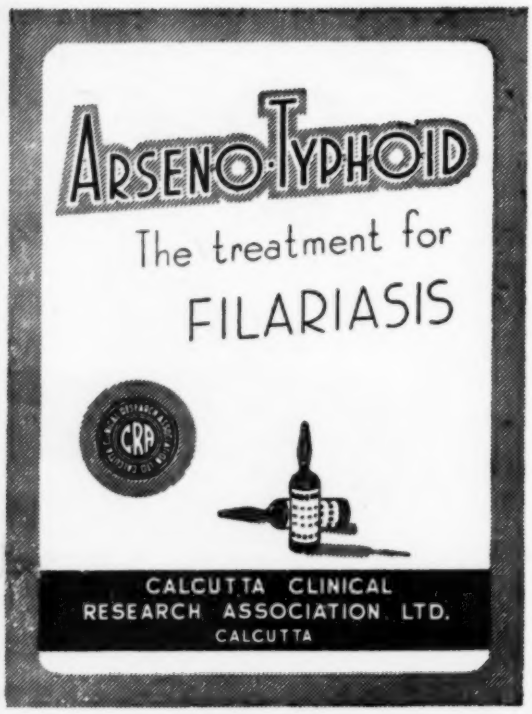

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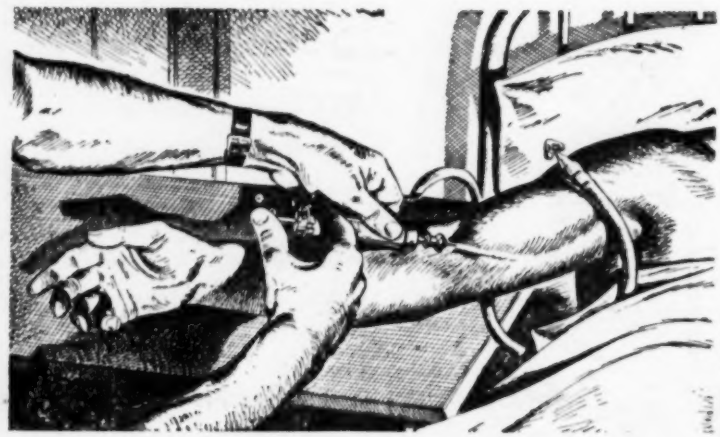

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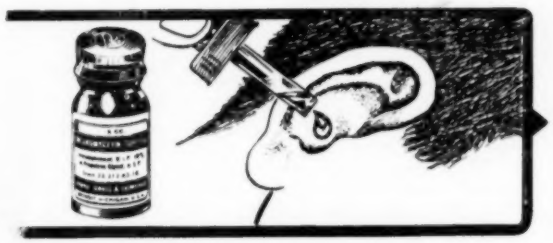

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